JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

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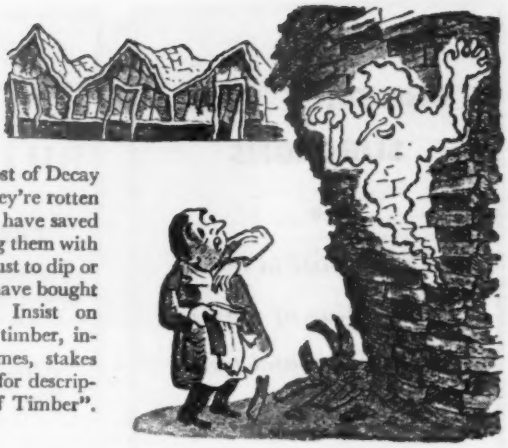

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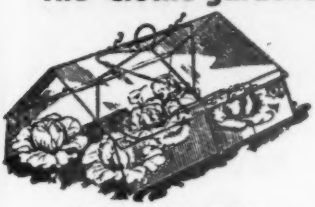

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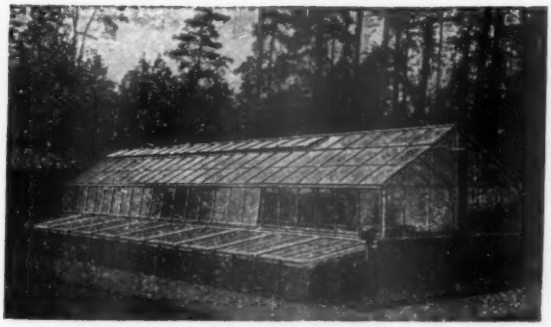

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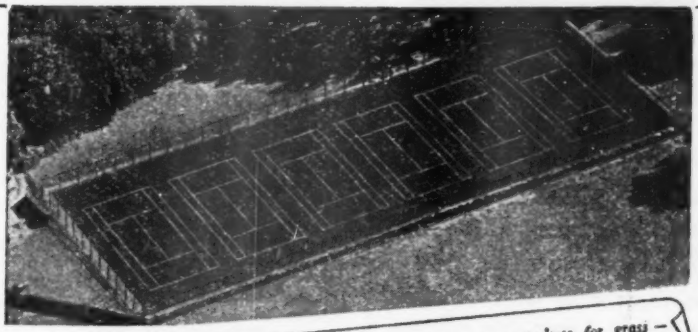

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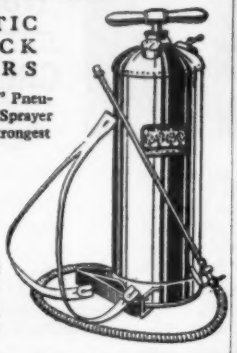

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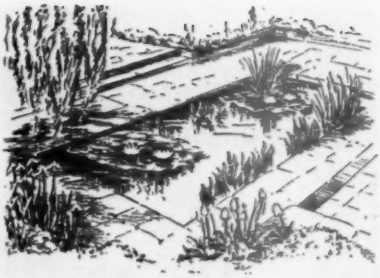

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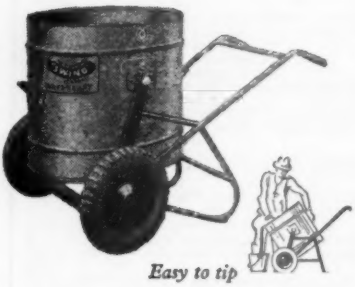

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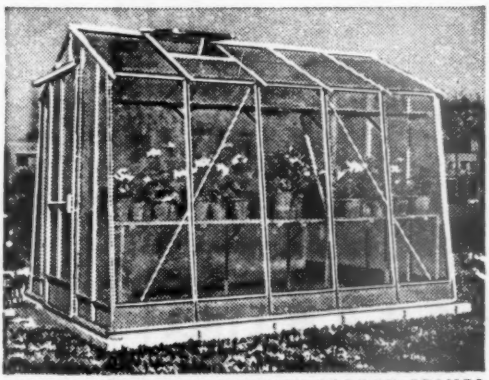

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THE PROCEEDINGS OF
THE ROYAL HORTICULTURAL SOCIETY

GENERAL MEETINGS

JUNE 12, 1951

ORCHID COMMITTEE—Mr. GURNEY WILSON, F.L.S., V.M.H., in the Chair, and five other members present.

Awards Recommended:

Award of Merit

To *Odontoglossum* 'Tromar' var. 'The Spinney' (*O.* 'Trogan' × *O.* 'Maricon') (votes 5 for, 0 against), from Lt.-Col. F. E. Griggs, The Spinney, Chislehurst, Kent.
To *Odontoglossum* 'Aldonia' (*O.* 'Alperor' × *O.* 'Tordonia') (votes 3 for, 0 against), from S. Tharp, Esq., 10 Farm Lane, Purley, Surrey.

RHODODENDRON COMMITTEE—Sir GILES LODER, Bt., in the Chair, and seven other members present.

Selected for trial at Wisley

Rhododendron (*Azalea*) (*mucronatum* white form × *indicum*) from Capt. Collingwood Ingram, The Grange, Benenden, Cranbrook, Kent.
Rhododendron (*Azalea*) 'Lanarth' from M. P. Williams, Esq., Lanarth, St. Keverne, Cornwall.

Other Exhibits

Rhododendron 'Theresa' var. 'Festival' ('Romany Chal' × *Griersonianum*) from The Director, R.H.S. Gardens, Wisley, Ripley, Surrey.
Rhododendron 'Angelo' (*Griffithianum* × *discolor*) Seedlings Nos. 1 and 2. Four seedlings of *R.* ('Loderi' × *Griffithianum*) of which the Committee desires to see again those numbered 3 and 4 from Capt. A. Granville Soames, O.B.E., Sheffield Park, Uckfield, Sussex.

JOINT DIANTHUS COMMITTEE—Mr. T. E. TOMALIN in the Chair, and eight other members present.

Mr. F. C. Brown. The Chairman paid tribute to the work done by the late Mr. F. C. Brown in his capacity as Secretary to the Committee.

Awards Recommended:

Award of Merit

To Show Pink 'Show Achievement' (votes 8 for, 0 against) exhibited by Allwood Bros., Ltd., Wivelsfield Nurseries, Haywards Heath.

Selected for trial at Wisley

Show Pink 'Show Excellence' and Show Pink 'Show Portrait,' both exhibited by Allwood Bros., Ltd., Wivelsfield Nurseries, Haywards Heath.

JOINT IRIS COMMITTEE—Col. F. C. STERN, O.B.E., M.C., F.L.S., V.M.H., in the Chair, and eleven other members present.

Selected for trial at Wisley

Bearded Iris 'Firedance' and 'Tarn Hows' shown by H. J. Randall, Esq., Sandilands, Brooklyn Road, Woking.
'Natalie' shown by E. Mansbridge, Esq., The Orchard, Merrow, Guildford.
'Mirette,' 'Arabi Pasha' and 'Barnett Anley' shown by Mrs. G. Anley, St. George's, Wych Hill Lane, Woking.
'Egyptian Night' shown by H. Senior Fothergill, Esq., 12 Abercorn Place, London, N.W. 8.

Other Exhibits

Bearded Iris 'Pink Tower' shown by H. Senior Fothergill, Esq., 12 Abercorn Place, London, N.W. 8.
'Canadian Pearl' and 'Mattie Gates' shown by The Orpington Nurseries Co., Orpington, Kent.
Seedling 5/45 shown by G. W. Darby, Esq., Rabley Heath, Welwyn, Herts.
Iris Douglasiana var. *alba* shown by the Director, Royal Botanic Gardens, Kew.

Iris for Identification

Iris versicolor (G. L. Pilkington, Esq.).
Iris chrysographes (G. L. Pilkington, Esq.).
Iris chrysographes (poor form) (Messrs. Prichard and Sons Ltd., Christchurch, Hants).

JOINT ROCK GARDEN PLANT COMMITTEE—Col. F. C. STERN, O.B.E., M.C., F.L.S., V.M.H., in the Chair, and eight other members present.

Awards Recommended:

Award of Merit

To *Pentapera sicula* (votes unanimous) as a hardy flowering plant for the alpine house, from Messrs. W. E. Th. Ingwersen Ltd., Gravetye Estate, East Grinstead, Sussex.
To *Dianthus* 'Highdown' (votes unanimous) as a hardy flowering plant for the rock garden, from Col. F. C. Stern, O.B.E., M.C., F.L.S., V.M.H., Highdown, Goring-by-Sea, Sussex.

Preliminary Commendation

To *Osteospermum caulescens* as a hardy flowering plant for the alpine house, from the Director, R.H.S. Gardens, Wisley, Ripley, Surrey.
To *Leucanthemum* sp. (subject to naming) as a hardy flowering plant for the rock garden. This was referred to the Scientific Committee for naming, from Messrs. Kibble and Clare, Ascot Wood Nurseries, Ascot, Berks.

Cultural Commendation

To C. H. Hammer, Esq., The Old Rectory, Boreham, Essex, for a well-grown plant of *Phyteuma hemisphaericum*.
To Col. F. C. Stern, O.B.E., M.C., F.L.S., V.M.H., Highdown, Goring-by-Sea, Sussex, for a very floriferous plant of *Campanula Hawkinsiana*.

Other Exhibits

Androsace Hausmannii, *Campanula orphanidea*, and *Dianthus neglectus* forma *pinnatifolia* (which was referred to the Scientific Committee), from G. B. Jones, Esq., Tregurrian, 74 Frank's Avenue, New Malden, Surrey.
Sideritis sp.? (Peter Davis, No. 14330), and *Conandron ramondioides*, from the Director, R.H.S. Gardens, Wisley, Ripley, Surrey.

JUNE 15, 1951

JOINT IRIS COMMITTEE—Mr. G. L. PILKINGTON in the Chair, and eleven other members present.

Selected for trial at Wisley

Iris chrysographes (Ludlow and Sherriff's form No. 14065) shown by P. M. Synge, Esq., Clare Cottage, West Byfleet, Surrey.
Seedlings No. 116, No. 101, No. 922, all shown by H. J. Randall, Esq., Sandilands, Brooklyn Road, Woking, Surrey.
Seedling 33/49 shown by E. C. Goulton, Esq., Beechenlea Lane, Swanley, Kent.
Seedling 45/25A, shown by L. W. Brummitt, Esq., 30 Bloxham Road, Banbury.
Seedling 50/116 shown by H. Senior Fothergill, Esq., 12 Abercorn Place, London, W. 8.
Seedling 11/48/2 shown by Mrs. G. Anley, St. George's, Wych Hill Lane, Woking, Surrey.

Other Exhibits

Iris laevigata (**A.M.** 1916) shown by C. W. Christie Miller, Esq., Swyncombe House, Henley-on-Thames.
Iris Pseudacorus Bastardi, shown by the Director, R.H.S. Gardens, Wisley.
Iris Pseudoacorus 'Golden Glory' shown by R. W. Wallace, Esq., The Old Gardens, Tunbridge Wells, Kent.

JUNE 26, 1951

SCIENTIFIC COMMITTEE—Mr. E. A. BOWLES, M.A., F.L.S., F.R.E.S., V.M.H., in the Chair, and four other members present.

Pollen-bearing Ovules.—It was noted that formation of pollen within ovules, comparable to that of *Primula denticulata* reported on June 12, 1951, had been recorded by S. J. A. Salter in *Passiflora carulea* and *P. palmata* and by M. T. Masters in *Rosa arvensis*; see Masters, *Vegetable Teratology*, 185 (1869).

Prolification of Inflorescence in Pelargonium.—Specimens were received from Mr. R. P. Burrows, Hitchin, of four Zonal Pelargoniums ('Mde. Hibbault,' 'Salmon Victory,' Dublin' and 'Paul Crampel') showing lateral prolification of the inflorescence. This abnormal development had occurred on all his Zonal Pelargoniums (about 60), the plants being of all ages from 5-month-old cuttings to 3-year-old stock plants, but not on Ivyleaf, scented leaf, Show, Regal or Fancy Pelargoniums. It seemed possible that this might have been a reaction to a rather sudden change from damp dull weather to bright hot and sunny weather.

Variegated Antirrhinum.—Three plants of Antirrhinum with variegated foliage were exhibited by Mr. E. G. Finch, Sandhurst Nursery, Camberley. These differed in flower colour but had similar broadly yellow-margined leaves. They had been produced experimentally by grafting shoots of a similarly variegated Antirrhinum on to normal Antirrhinum plants of different colour and then propagating by cuttings the resultant chimaeras. About 10 years ago the raiser found that a small-flowered magenta form of *Antirrhinum majus* tended to produce leaves partly lacking in chlorophyll when the growing tips of the shoots were treated with colchicine in an alginate carrier. On plants having a lateral half of the leaf without chlorophyll, some of the stem-cells were also without chlorophyll, this deficiency showing as a white or yellow line running down the stem. By grafting the raiser brought together a normal bud and another with cells lacking chlorophyll and after many attempts he obtained a perfect periclinal chimaera. The seedlings from this are all green or all white, the latter kind dying from lack of chlorophyll. Hence chimaeras with other flower-colours could only be created vegetatively by grafting, a plant of the desired flower-colour supplying the green part of the stem. In this way the raiser had produced variegated plants of diverse habit (dwarf, intermediate and tall) with a great range of flower-colour (white, yellow, orange, pink, rose, mauve and red), which could be propagated by cuttings.

Pelargonium Forms.—Mr. A. Langley Smith exhibited specimens of dwarf hybrid Pelargoniums derived from a cross made by him about 1908 between *P. crispum* and *P.* 'The Shah,' a Fancy Pelargonium. Other parents of the strain included plants named *P. citriodorum* 'Prince of Orange,' *P. crispum variegatum*, *P. crispum minor*, *P. pumilum* and *P. atrum*.

Peloric Digitalis.—A specimen was received from Mr. D. L. Barker of *Digitalis purpurea* with an erect regular terminal flower, a fairly frequent occurrence in this species.

Viola yakushimana.—Messrs. W. E. Th. Ingwersen exhibited a specimen of *Viola yakushimana*, apparently the smallest member of the genus Viola, and notable for its minute rounded leaves and white and violet flowers. It is a native of Yakushima, Southern Japan.

Sedum from Bhutan.—A yellow-flowered Sedum, as yet unidentified, raised from seed (Ludlow & Sherriff 19688) collected in Bhutan, was exhibited by Messrs. Kibble and Clare, Ascot. The whole plant had an aromatic fragrance.

FRUIT AND VEGETABLE COMMITTEE—Mr. F. A. Secrett, C.B.E., F.L.S., V.M.H., in the Chair, and eight other members present.

Exhibits

Group of Strawberry Royal Sovereign Pine Tree Strain from H. S. Melbourn, Esq., Pine Tree Fruit Farm, Cranborne, Wimborne, Dorset.

Recommended for trial at National Fruit Trials, Wisley

Strawberry Hame Seedling No. 23 from G. Stanley Dunn, Esq., The Hame, Redbourn, Herts.

FLORAL COMMITTEE A—Mr. G. W. Leak, V.M.H., in the Chair, and seventeen other members present.

Awards Recommended:

Silver-gilt Flora Medal

To Messrs. Blackmore & Langdon, Bath, for an exhibit of Delphiniums and Phloxes.
To Messrs. John Waterer Sons & Crisp, Ltd., Twyford, for an exhibit of Paeonies.

Silver-gilt Banksian Medal

To Messrs. Allwood Bros., Ltd., Haywards Heath, for an exhibit of Pinks.

Silver Flora Medal

To Messrs. R. H. Bath, Ltd., Wisbech, for an exhibit of Paeonies.
To Messrs. Kelway & Son, Ltd., Langport, for an exhibit of Delphiniums and Paeonies.
To Messrs. Lindabruce Nurseries, Ltd., Lancing, for an exhibit of Pinks.

To Messrs. M. Prichard & Sons, Ltd., Christchurch, for an exhibit of herbaceous plants.
To Messrs. R. Wallace & Co., Tunbridge Wells, for an exhibit of Irises, Lilies, etc.
To Worcester Park Horticultural Society, for an exhibit of Delphiniums.

Silver Banksian Medal

To Mr. J. Amand, Holbeach, for an exhibit of Ixias and Ranunculus.
To Messrs. Thomas Carlile, Ltd., Twyford, for an exhibit of herbaceous plants.
To Messrs. G. & A. Clark, Dover, for an exhibit of herbaceous plants.
To Messrs. P. de Jager & Sons (London), Ltd., London, for an exhibit of Dutch Irises.
To H.R.N. Rickett, Esq., Pirbright, for an exhibit of Delphiniums.
To Messrs. E. Webb & Sons (Stourbridge), Ltd., Stourbridge, for an exhibit of Gloxinias, Salpiglossis, etc.

Flora Medal

To Messrs. Hale & May, Ltd., Cookham, for an exhibit of Roses.
To Messrs. E. W. Stedman, Ltd., Longthorpe, for an exhibit of Roses.
To Messrs. Telston Nurseries, Otford, for an exhibit of Pelargoniums.
To Messrs. Wakeley Bros. & Co., Ltd., North Mymms, for an exhibit of Paeonies.
To Mr. G. G. Whitelegg, Knockholt, for an exhibit of Irises.

Banksian Medal

To Mr. F. Little, Luton, for an exhibit of Pelargoniums.
To Mr. C. Newberry, Knebworth, for an exhibit of Pinks and Anemones.
To Messrs. Winkfield Manor Nurseries, Ascot, for an exhibit of herbaceous plants.

Preliminary Commendation

To *Baptisia australis* 'Indigo,' from Messrs. M. Prichard & Sons, Ltd., Riverslea Nurseries, Christchurch, Hants.

Certificate of Cultural Commendation

To Mr. E. Humphris, gardener to R. F. W. Cartwright, Esq., Aynho Park, Banbury, for Pelargonium 'Aynho Park.'

Selected for trial at Wisley

Baptisia australis 'Indigo,' from Messrs. M. Prichard & Sons, Ltd., Christchurch.
Chrysanthemum 'Jamaica Gold,' from Dr. G. A. C. Herklots, Chobham, Surrey.

Other Exhibits

Armeria hybrids, from Dr. M. Amsler, Hawkhurst.
Begonias, from Messrs. H. Woolman, Ltd., Birmingham.
Fuchsias, from C. J. Howlett, Esq., Earley, Reading.
Pelargonium, from Mr. R. E. J. Bradshaw, Rudgwick.
Pelargonium, from J. S. Milne, Esq., Newcastle-upon-Tyne.
Roses, from Messrs. Winkfield Manor Nurseries, Ascot.
Violas and Roses, from Mr. C. A. Jardine, Feltham.

FLORAL COMMITTEE B—Lord ABERCONWAY, C.B., LL.D., V.M.H., in the Chair, and nineteen other members present.

Awards recommended:

Silver-gilt Flora Medal

To Messrs. W. A. Constable, Ltd., Southborough, for an exhibit of Lilies.

Silver Flora Medal

To Messrs. Worfield Gardens, Bridgnorth, for an exhibit of succulents.

Silver Banksian Medal

To Messrs. East Lodge Gardens, Enfield, for an exhibit of rock garden plants.
To Messrs. W. E. Th. Ingwersen, Ltd., East Grinstead, for an exhibit of rock garden plants.
To Messrs. Kibble & Clare, Ltd., Ascot, for an exhibit of rock garden plants.
To Mr. K. W. Harle, Lower Basildon, for an exhibit of succulents.
To Messrs. Old Welwyn Gardens, Welwyn, for an exhibit of rock garden plants.

Flora Medal

To Messrs. Burkwood & Skipwith, Ltd., Kingston, for an exhibit of flowering shrubs.
To Messrs. Feilden & Crouch, Wrotham, for an exhibit of rock garden plants.
To Messrs. Hollybush Nurseries, Harpenden, for an exhibit of Penstemons and other rock garden plants.

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

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THE SECRETARY'S PAGE

ANNOUNCEMENTS—SEPTEMBER AND OCTOBER

Shows

THURSDAY, September 6, 1 P.M. to 7.30 P.M. FRIDAY, September 7, 10 A.M. to 5 P.M.	National Dahlia Society's Show.
TUESDAY, September 11, 12 NOON to 7 P.M.	Fortnightly Show. Alpine Garden Society's Competition.
WEDNESDAY, September 12, 10 A.M. to 5 P.M.	Cactus and Succulent Society's Competition.
FRIDAY, September 14, 12 NOON to 7 P.M.	National Rose Society's Show.
TUESDAY, September 18, 2 P.M. to 7 P.M. WEDNESDAY, September 19, 12 NOON to 5 P.M.	Royal Air Force Horticultural Show.
TUESDAY, September 25, 12 NOON to 7 P.M. WEDNESDAY, September 26, 10 A.M. to 5 P.M.	Fortnightly Show.
TUESDAY, October 9, 12.30 P.M. to 7 P.M.	Fortnightly Show.
WEDNESDAY, October 10, 10 A.M. to 5 P.M.	Fruit and Vegetable Show.
TUESDAY, October 23, 12 NOON to 6 P.M.	Fortnightly Show. Tree and Shrub Competition.
WEDNESDAY, October 24, 10 A.M. to 5 P.M.	Floral Arrangement Competition for Professionals.

Lectures

TUESDAY, September 11, at 3 P.M. "Attractive Plants to Avoid" by MR. E. A. BOWLES, F.L.S., F.R.E.S., V.M.H.

TUESDAY, September 25, at 3 P.M. Masters Memorial Lecture, "Changes in Fruit Varieties and Production Methods since the time of Dr. Masters," Part I, "Berry Fruits," by DR. H. V. TAYLOR, C.B.E., V.M.H.

TUESDAY, October 9, at 3 P.M. Masters Memorial Lecture, "Changes in Fruit Varieties and Production Methods since the time of Dr. Masters," Part II, "Tree Fruits," by DR. H. V. TAYLOR, C.B.E., V.M.H.

TUESDAY, October 23, at 3 P.M. "The Making of a Woodland Garden," by MR. N. HADDEN.

Demonstrations at Wisley—The following demonstration will be given at Wisley, that on the second day being a repetition of that given on the first.

Vegetable Garden

October 3–4. Digging, Trenching, Manuring and Composting. (Commencing at 2 P.M.)

Journal wrappers—Fellows will notice that the method of wrapping the JOURNAL has been altered, commencing with this issue. The reason for this change is that the Post Office has objected to the old form of wrapping which contravenes its regulations. The new type of wrapping is not so convenient as the old one, both from the point of view of the printer and the recipient, but strong representations to the Postmaster-General on this question were overruled. The Secretary would be glad to have examples, complete with wrappers, of any JOURNALS which may be received by Fellows in a mutilated condition.

German Horticultural Society—We have been asked to announce that the Deutsche Gartenbau Gesellschaft has renewed its activities. Its offices are at 39 Schlüterstrasse, Berlin-Charlottenburg, 4.

Wisley Trials—The Royal Horticultural Society will carry out the following trials during the coming season:

Iris spuria and its hybrids Papaver orientale Pyrethrum	3 plants of each variety, to be received at Wisley not later than September 30, 1951.

Plants and Seeds for Invited Trials

A fee of 10*s*. will be charged for each entry accepted for trial. No firm or person may send more than ten varieties.

Anyone desiring to send a variety or strain to an invited trial must obtain from the Director of the Gardens an entry form which must be completed and returned by a specified date. The entrant must certify on the form either

(*a*) that the variety or strain has been raised or developed by him

or (*b*) that the variety or strain was, or is about to be, introduced by him to British commerce.

The entrant must also supply sufficient particulars of the history of the variety or strain to substantiate his certificate, but such particulars will not be published by the Society without the sender's consent.

Entries should be addressed to the Director, The Royal Horticultural Society's Gardens, Wisley, Ripley, Woking, Surrey (goods via Horsley Station, Southern Region), and should reach him not later than September 30, 1951.

WISLEY IN SEPTEMBER

As in August the principal attractions in the Gardens this month centre round the Floral Trial Grounds and the Herbaceous Borders. In the latter the display is coming to an end, but much depends at this time of year on the weather, especially on the frequency of heavy rain storms which can quickly wreak havoc even on a well staked border. A plant whose merit cannot be too highly stressed is the bright blue *Salvia uliginosa* which makes a good foil for the velvety-red flowers and purplish-crimson foliage of *Lobelia fulgens*. *Aster acris* is another good plant requiring little or no staking, growing about 18 inches to 2 feet high, massed with clear lavender flowers; *A.* 'Snowsprite' is valuable for those with a small border as it only grows 9 inches high. The two Sedums which are growing here are fairly similar, and both are variable plants, *S. spectabile* having paler pink petals and more prominent stamens than *S. Telephium*. Many people object to their rather crude colouring but they are, taken by and large, worth growing. Like *Buddleia Davidi*, they are particularly attractive to butterflies and are often covered with these.

Towards the end of the month the autumn colours will begin to appear among the trees and shrubs in Seven Acres; *Prunus Sargentii* is the first to turn to bright crimson, followed by the deciduous Spindleberries which bear, in addition, pink fruits, splitting to expose scarlet-coated seeds. They are followed by such plants as *Viburnum betulifolium*, *Aronia floribunda* and *Crataegus prunifolia*, while Berberis and Pyracanthas contribute bright fruits to the colourful picture. Most of the heathers have faded into rusty brown hummocks, but here and there later varieties such as *Calluna vulgaris* 'H. E. Beale' or *Erica vagans grandiflora* stand out clearly.

On the rock-bank in the Award of Garden Merit Collection are Colchicums, *Sternbergia lutea* and *Gentiana sino-ornata*. Many of the herbaceous plants previously mentioned have received the Award of Garden Merit and are therefore planted in this section of the garden also, as well as *Aster* × *Frikartii*, the pretty silvery pink fragrant flowered *Chrysanthemum rubellum*, and *Rudbeckia speciosa*. The last mentioned is one of the lower growing Cone-flowers only reaching a height of between 2 and 3 feet. The flower heads are borne on well-branched stems, the ray florets being orange-yellow and the disc deep purple.

Bright colours are creeping into the Wild Garden, the first to change to scarlet being *Disanthus cercidifolia* closely followed by *Oxydendron*

arboreum, and *Cyrilla racemiflora* which bears in addition slender racemes of white flowers. In the clearing an interesting colour combination is formed by the dramatic olive-green seed pods of *Lilium giganteum*, the purple-spotted flowers of the Toad Lily, *Tricyrtis hirta*, and lilac Colchicums. But the most memorable feature is without doubt drifts of the charming *Cyclamen neapolitanum* the flowers of which begin to appear in advance of the leaves.

There is not a great variety among the plants still in flower in the Rock Garden, but some bright patches of colour still remain, notably those created by *Veronica chamaedryfolia*, an admirable scarlet-flowered plant which has been flowering for months, and by *Convolvulus mauritanicus* which is similar in habit and has clear powder blue flowers offset by grey green leaves. At the foot of the slope *Kniphofia Galpinii* is producing abundant bright orange flower-spikes, while in many places are to be seen the purple waxy berries of *Pernettya mucronata*. *Polygonum affine* and *P. vacciniifolium* are two indispensable plants for late season display, the first never failing to produce crimson red spikes while the other, of more flexuous habit, has paler pinkish flowers.

Of the interesting plants in flower in the Alpine House is one now determined as *Gentiana fascicularis*, a twining Gentian which was raised from seeds collected in Assam by F. KINGDON-WARD under the number 16020. The plant has been illustrated in the *Botanical Magazine* (t. 4838) under the name of *Crawfurdia fasciculata*, but the nomenclature has been greatly confused, the whole matter being discussed at length by MR. SEALY in *Kew Bulletin* 1945, pp. 311–17. It is a most desirable plant which grows freely, bearing a profusion of bright blue flowers. In addition there grow the beautiful large-flowered *Gentiana Kurroo*, *Saponaria cypria* of neat habit, *Cyclamen graecum* and the rather tender *Oxalis lobata*. The Crassulaceae are represented by *Sedum cauticolum*, the tall growing *S. Lampusae*, native of Cyprus, and *Crassula Bolusii*.

Outside the Alpine House, the beds of Gazanias are a blaze of orange and yellow, while turning to Weather Hill the multi-coloured Annual Border and Rose Borders will claim visitors' attention.

In the Floral Trial Grounds are Chrysanthemums, Michaelmas Daisies and Dahlias, while the vegetable section in Wisley village has an interesting collection of trials of outdoor Tomato varieties, Onions, Parsley and Carrots.

The Greenhouses begin to attract more visitors as the days grow cooler. In the Temperate House the side staging is kept colourful with Begonias, Pelargoniums and Achimenes while in the centre beds large plants of the purple flowered *Tibouchina semidecandra* and the white-bloomed *Camellia Sasanqua* are beginning their long display. Trained against the roof supports are *Solanum Wendlandii* and *Buddleia madagascarensis*, the latter bearing slender terminal panicles of orange flowers.

In the Half Hardy House the interesting bi-generic hybrid between *Amaryllis Belladonna* and *Crinum Moorei* called *Amarcrinum Howardii* is flowering well. Also to be seen are the large yellow flowers of *Calceolaria Pavonii*, a native of Peru, *Solanum jasminoides* and the Kangaroo-Paw, *Anigozanthos flavida*. There is also a comprehensive collection of Fuchsias in one of the houses.

At the foot of the Laboratory Walls the shrubby, blue-flowered hybrid *Caryopteris clandonensis* and one of its parents, *C. incana*, are flowering in combination with the deep blue *Ceratostigma plumbaginoides* and *C. Willmottianum*, while against the grey stone walls pink Belladonna Lilies and forms of *Nerine Bowdenii* complete the pleasing scene.

NEW VARIETIES OF CAMELLIA RETICULATA ESTABLISHED IN CALIFORNIA

Ralph S. Peer

THE fact that eighteen newly-discovered varieties of *Camellia reticulata* are now being propagated commercially in California emphasizes a new kind of plant collecting. Through generous use of air mail facilities and commercial air transport, but without the intervention of an adventurous and learned plant explorer, these important new flowering trees have been added to the horticultural wealth of the Western World. Their existence had been intimated in an article which appeared in the JOURNAL in 1938 (1), but it was not until ten years later that specimens were brought from Yunnan to California.

The first descriptions (outside of China) appeared in the *Bulletin of the Southern California Society* in 1949 (2). At the Camellia and Magnolia Conference, April 4, 1950, MR. T. T. YÜ read a most interesting and authoritative paper—"The Varieties of *Camellia reticulata* in Yunnan"(4) —and showed colour slides made from Chinese photographs. The details of the modern horticultural methods which have made these new Camellias available in the U.S.A. are told in the 1950 *Yearbook of the American Camellia Society* (3).

DR. WALTER LAMMERTS, head of the Horticultural Research Department of Descanso Gardens, La Cañada, California, initiated inquiries in 1946 about unknown Camellias said to be growing in Yunnan. In 1947, an air mail letter from DR. LAMMERTS inquiring about the subject was forwarded to MR. T. T. YÜ, famous Chinese botanist, then stationed at the Royal Botanic Garden in Edinburgh. MR. YÜ referred this letter to his friend and colleague, PROFESSOR H. T. TSAI, whom he had left in charge of the Yunnan Botanical Institute in Kunming. One can well imagine the excited state of mind of DR. LAMMERTS when in January, 1948, he received by air mail, direct from PROF. TSAI, information that twenty hitherto unknown varieties of *C. reticulata* could be obtained from the Institute. The renowned California hybridist, seeking new species for experimental work, had stumbled upon already existing garden varieties which are, without doubt, the result of many centuries of horticultural development.

In March, 1948, one each of twenty varieties were purchased by Descanso Gardens from the Institute, transported by air from Kunming to California, and there found to be, as described—"new" *C. reticulata*. An epic struggle under the direction of MR. HOWARD ASPER

and DR. LAMMERTS to save these plants then began—they were adversely affected either by the change in climate, confinement while in transit or the fumigant administered by the Plant Quarantine. Several other shipments were required and many scions were transported by air mail before eighteen varieties were satisfactorily established.

Because of the uncertain outcome of his importation efforts, DR. LAMMERTS did not publicize the facts, and later in 1948 the noted Australian nurseryman, MR. WALTER HAZLEWOOD, without any knowledge of these events, also investigated Chinese Camellias by the air mail method. Toward the end of that year he, likewise, heard from PROF. TSAI and placed a trial order with the Institute. His first shipment of five plants arrived in Sydney in February, 1949, and the battle to keep them alive paralleled the experiences in California.

During a trip around the world by plane, the writer, visiting MR. HAZLEWOOD at his establishment near Sydney, heard for the first time about the Camellias offered by the Yunnan Botanical Institute. Subsequently, I corresponded with PROF. TSAI, became convinced of his sincerity and finally ordered twenty varieties which arrived by air express in Los Angeles in March, 1949. While addressing the members of the Southern California Camellia Society in April, 1949, I mentioned these new *reticulatas* and gave the meagre details which had come to my attention. DR. LAMMERTS, who was in the audience, got in touch with me a few days later and told me of his somewhat earlier experiences. We decided to collaborate and I made available to Descanso Gardens my surviving plants. Subsequently, I imported both scions and plants which were added to our common effort.

While on my world flight, I became personally acquainted with MR. RALPH DEAN, head of the Gardens Department of Hong Kong. We had corresponded about Camellias and I was pleased to have this opportunity to express my appreciation for information and assistance given previously. The difficulties encountered in connection with importations direct from Kunming led me to enlist the assistance of this very able and most co-operative horticulturist. He agreed to my proposal to have a large shipment of the *reticulatas* detained in Hong Kong with the expectation that getting them accustomed to sea-level existence might make transportation overseas much easier.

For reasons still undetermined, PROF. TSAI has failed to answer my letters since July, 1949, and, accordingly, I suggested to MR. DEAN that we should look for a Chinese botanist or horticulturist to fly to Kunming as our purchasing agent. MR. DEAN secured the services of PROF. W. Y. CHUN, Director of the Sun Yat Sen Botanical Institute of Canton, who desired especially to make this trip to consult with his colleagues in Yunnan.

In September, 1949, this mission was completed successfully and PROF. CHUN brought from Kunming (on the last commercial plane to reach Hong Kong) 62 plants of 19 varieties of *C. reticulata*. These plants were not especially "happy" in Hong Kong, but most of them survived. While awaiting shipment to their ultimate destinations, MR. DEAN sent experimental scion shipments which, however, were only partially successful. Eventually, the plants were distributed by air

express to the backers of the project—The Royal Horticultural Society, MR. W. G. HAZLEWOOD, Huntington Gardens (San Marino, California) and the writer.

This turned out to be the final shipment because of the stoppage of air mail and air transport to Yunnan.

A mysterious aspect of this Camellia discovery is that many famous and highly efficient plant explorers have passed through Kunming without reporting the existence of the garden *reticulatas*. MR. GEORGE FORREST, for example, made that city his headquarters on several occasions. During World War II many American and British soldiers and airmen were in Kunming, the northern terminus of the Burma Road. Trees of *C. reticulata* of varieties previously unknown grow in the public parks and in temple gardens. There is an extraordinarily complete collection of *reticulata* varieties and *reticulata* hybrids in the private garden of MR. Y. T. LIU (MR. LIU was formerly a member of the Southern California Camellia Society). Instead of reporting the presence of the garden varieties and hybrids of *C. reticulata*, MR. FORREST sent back seeds of various species and thus enriched the British landscape. It seemingly did not occur to any of the travellers to Kunming that the Camellias which are found in every park, garden and courtyard were mostly varieties of extraordinary beauty unknown to the outside world.

Since the spring of 1948, Descanso Gardens has striven to make the new *reticulatas* available for commercial distribution. Many vigorous and well-grown plants of fifteen different varieties are now being made ready for release (in complete sets only) in March or April, 1952. An additional three varieties will be offered in March or April, 1953.

MR. T. T. YÜ has given excellent descriptions (4) of this group of *reticulatas*, but, as a matter of convenience, I give below a list of the fifteen items, soon to be delivered, with brief notes as to their characteristics:

CHANGCHATIECHIH (Chang's Temple)
: This variety has been propagated from a large tree which, since time immemorial, has stood in the garden of an ancient Buddhist temple near Kunming. Large pink, incomplete double blossoms with wavy petals. Large, wide leaves. Mid-season. (Fig. 147.)

*HOYEHTIECHIH (Thick Leaf Butterfly)
: Large, rose pink, incomplete double flower. Stamens are divided into several groups. Petals resemble butterfly wings. Long leaves. Late.

*HSIAOKUEIYEH (Small Osmanthus Leaf)
: Medium, orchid pink, rose form, double flower. The colour is distinctive and unique. Leaves are small and pointed like *Osmanthus fragrans*. Mid-season.

*LIUYEHYINHUNG (Willow Leaf Pink)
: Large, bright pink, incomplete double blossom. Petals wavy and of silky texture. Long, thin leaves. Mid-season.

MOUTANCHA (Paeony Flower)
: A literal translation of the name is 'Tree Paeony Camellia.' In Yunnan, blossoms are often 8 inches or more in diameter. Flowers

* Variety which flowered in California prior to April 1, 1951.

are crimson to pink, rose form, double, with white veins and stripes on inner petals. Long, pointed leaves. Late.

*PAOCHUCHA (Noble Pearl)
Large, semi-double deep red flower with crinkled petals. Large, broad leaves. Late. (Fig. 148.)

*SHIHTZETOU (Lion Head)
Large, deep red, incomplete double blossom. Petals are frequently variegated with white and are very crinkled and wavy. Both solid red and variegated flowers have been noted in California. Large, dark green leaves. Mid-season. (Fig. 159.)

SUNGTZELIN (Pine Cone)
Medium, deep scarlet red, rose form, flower built up like a pine cone. Long leaves, dark green and reticulate above, bright yellowish green beneath. Mid-season.

TALICHA (Queen of Tali)
Large, incomplete double blossom. The colour is given by Yü as oriental red. PROF. TSAI describes it as rose-pink with petals lightly splashed with white. Large, broad leaves. Mid-season.

*TAMARNAO (Large Cornelian)
Large, incomplete double, variegated, deep rose red and white flower. Petals are crinkled and wavy. Plants bearing predominantly red flowers are named HUNGMARNAO and if the blossoms are predominantly white, PEIMARNAO. All three forms have blossomed in California. Large, dark green leaves. Mid-season.

*TATAOHUNG (Large Crimson)
Very large, red, semi-double blossom with crepe-like petals, very wavy and crinkled. Large leaves. Mid-season. (Fig. 158.)

*TAYINHUNG (Large Pink)
Large, bright pink, semi-double flower with wavy petals. Long leaves. Mid-season. (Fig. 149.)

TSUEBAN (Rose Flower)
Medium, light carmine, rose form double blossom. This variety is very floriferous. Leaves are medium size, dark green, prominently reticulate above; bright yellowish green below. Mid-season.

*TZEPAO (Purple Gown)
An extraordinary variety which changes the form of blossom as it develops. When first opened, it is a large formal double, purple red with white pin stripes. It then slowly becomes larger and changes to the form of a paeony having many wavy petals, wine-red in colour. Large leaves. Mid-season.

*Chinese name unknown (Butterfly Wing Paeony)
PROF. TSAI reports this to be a cross between 'Moutancha' and 'Hoyehtiechih.' Large, pink, semi-double flowers. Leaves are long and pointed. Mid-season.

The additional varieties (none of which has flowered prior to April 1, 1951) to be ready for distribution in 1953 are:

MAYEHTIECHIH (Reticulate Leaf Butterfly)
Medium, crimson, fully double blossom. Leaves large and pointed and prominently reticulate. Dark green above; bright green beneath. Late.

* Variety which flowered in California prior to April 1, 1951.

MAYEHYINHUNG (Reticulate Leaf Pink)
Medium, bright pink, incomplete double flowers. Leaves long and pointed; dark green and prominently reticulate above and bright yellowish green beneath. A strong, bushy grower with handsome foliage. Mid-season.

TAKEIYEH (Large Osmanthus Leaf)
Medium, carmine pink, semi-double flower. Leaves shaped like those of *Osmanthus fragrans*. Late.

Both MR. T. T. YÜ and PROF. H. T. TSAI confirm that propagation of all garden *reticulatas* must be carried on by grafting. All plants shipped from Kunming have been inarched and I am informed that no other method is used in China. In the U.S.A. inarching has been abandoned and the garden variety of *reticulata* has been cleft-grafted for many years, using japonica or Sasanqua understock.

On various occasions the understock shipped from Kunming has been allowed to grow and has been identified as *C. japonica*, var. 'Alba Plena.' At first thought, it seems curious that a relatively slow-growing variety is used for this purpose. The writer has noted in the region of Orizaba in Mexico—where the climate and weather are similar to that of Kunming—that 'Alba Plena' grows at a furious rate, producing two sets of blossoms annually. It is possible, therefore, that, in Yunnan, 'Alba Plena' is a fast-growing and highly suitable plant for understock.

Descanso Gardens has invented new techniques to cope with the special problems encountered. As few of the imported plants survived it became the accepted practice to cleft-graft scions as quickly as possible after a plant appeared to be "tired." This happened very often during the summer and autumn of 1948 and 1949, and special understock retarded by refrigeration was provided to overcome seasonal difficulties.

When the new varieties have been re-established on japonica understock after arriving in California they become completely active and lose the "tenderness" which makes importation so hazardous. There are indications that imports develop special weakness because the fumigant used by the Plant Quarantine enters the uncalloused portion of the inarched section. In any event, scions were taken from each plant showing signs of deterioration, and this precaution prevented many losses. The grafts were then kept under continuous light in a hothouse (65°) and fed frequently with a nutrient solution. Once the scion bud had opened, growth was fantastically rapid. Within a few months the single stalk covered with a normal quantity of leaves had reached the ceiling. Such plants, cut into a large number of scions, are used to produce more plants by usual cleft-grafting methods. All understock is fast-growing *C. japonica*, generally more than five years old.

When sufficient "mother" plants were ready, the continuous light treatment was discontinued to permit all specimens to resume a normal growth cycle. Plants placed in a lath house quickly fall into their usual flowering and growth habits.

During the spring of 1951, Descanso Gardens undertook the production of approximately 500 grafts of each of fifteen varieties all on japonica understock. After grafting, the plants were placed in long, covered bins under constant humidity and controlled temperature

conditions. The degree of humidity and optimum temperatures had been determined previously and there were few losses.

The first lot of grafts, suitable for sale to the public, was placed in a lath house in the fall of 1950. Some of these plants flowered during the 1950–51 season.

The difference between the weak, slow developing plants which arrived from the Plant Quarantine and their third generations produced by cleft-grafting is quite marked. The unsightly wounds caused by inarching are not present. The symmetrical, well-branched grafts compare favourably with *C. japonica* specimens of similar age.

MR. T. T. YÜ has now returned to China and plans to try cleft-grafting in Kunming. It will be interesting to learn if he can duplicate the California results.

The announcement of these new plants to the American public has created great interest amongst Camellia enthusiasts. Prior to April 1, 1951, only one foreign order had been booked—from New Zealand. Descanso Gardens sells only to nurseries and will dispose of its current growing stock only in complete sets—one each of fifteen varieties. The retail price will vary from $800 to $1,000 per set, depending upon the local margin of profit and transport costs. In some sections there are interstate quarantine regulations which will increase shipping difficulties. Many of the first shipments will be acquired by nurseries in various sections for propagating use, and within two years local production will be possible.

The growth characteristics are not completely known, but it is assumed that all or most of the varieties will conform to previous experience with *C. reticulata*, var. 'semi plena.' In general, the present form of garden *reticulata* does not grow well either in warm, humid areas (Florida and regions adjoining the Gulf of Mexico) or in very dry areas (interior valleys of southern California).

It is the opinion of MR. YÜ, DR. LAMMERTS and others who are familiar with the *reticulatas* that some, if not all, of them are hybrids—probably *reticulata* × *Pitardii*, *reticulata* × *saluenensis* or *reticulata* × *japonica*. The leaf characteristics are certainly variable but it can be argued that any group of wild *reticulata* seedlings produces many leaf forms. DR. LAMMERTS believes, however, that none of the new importations is sterile—he has already succeeded in crossing several varieties with *C. japonica*. PROF. TSAI has likewise advised that successful crosses have been produced at the Institute in Kunming.

The blossoms which have appeared on the Kunming *reticulatas* in California are generally superior in size and beauty to the flowers of *C. japonica* imported or developed during the last 150 years. After the now known new *reticulatas* are generally distributed it seems probable that normal propagation methods will produce many new and highly interesting varieties quite different from our existing garden japonicas.

MR. T. T. YÜ, PROF. H. T. TSAI and others have been struck by the great beauty of *C. heterophylla*, not yet found in its wild form, but growing as a garden flower in south-western Yunnan. As its name indicates, the leaves vary—no two alike. This species is propagated only by inarching. MR. YÜ and PROF. TSAI have indicated that many additional

sorts of garden *reticulatas* and *reticulata* hybrids are to be found in private gardens in Kunming. It is hoped that when conditions in Yunnan become normal the garden varieties of Camellia grown there can be thoroughly examined and specimens of other desirable varieties obtained for export.

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PINKS

M. C. Allwood, F.L.S., V.M.H.

(*Lecture given on June* 11, 1951; MR. E. P. F. SUTTON *in the Chair*)

EVERYONE loves the shy, unassuming homely little Pink and, strangely enough, they have done so right down the ages, as far back in ancient history as the days when Greece was great. So this plant is unique in the horticultural world. Nearly everybody can grow the Pink, even if he has only got a flower pot upon a windowsill or a tiny piece of ground which can see the sun.

It is so attractive every day in the year, whether actually in flower or not, while the modern perpetual flowering form blooms for seven months in the year. Its silvery tufted foliage in winter is a constant source of joy and admiration; there is nothing about a Pink which is not lovely.

There is a mystery about this plant, the Pink. Its very name is rather ridiculous, because we get pink Pinks, white Pinks, red Pinks and so on. No one is quite sure how it originated nor can we accept all the explanations. However, no one can change the name.

I have spent much time in looking up the history of the Pink and written many pages upon its origin. Undoubtedly *Dianthus plumarius* is the principal ancestor of the Pink. However, such species as our own Cheddar Pink, *Dianthus caesius*, which grows wild on the Cheddar Cliffs in Somerset, have also played a prominent part in the developing of the old type of Garden Pink. Other species, such as *Dianthus petraeus*, have undoubtedly helped in their development, so you see it is like the British people. It has a very mixed origin. It is the blending of many races and, in modern language, it is a mongrel, but so is every race of living things that has merit.

Until the early part of the fourteenth century all Pinks had single flowers.

GERARD is the earliest writer who mentioned a double-flowered Pink, which would be about the end of the sixteenth century. However, to note how the plant developed, in 1839 that famous old horticulturist,

THOMAS HOGG, gave a list of 154 varieties of Pinks raised by 95 different raisers. Those were the heydays of the Pink. At Salisbury in one year there were six Pink Shows held. I hope these happy days may return again.

At some periods in its long history the Pink has been excessively popular. This has always synchronized with great national prosperity. I believe history is going to repeat itself. In the early Victorian era special Pink Shows were held up and down the country, usually in old taverns, and this excess of popularity coupled with the extremely fastidious methods employed in its cultivation for Show purposes, almost killed it because the Pinks became a race of pampered pets. So, like spoilt children, it eventually fell into disfavour. It was driven into the shadows with all its beauty and adorable charm, with its fascinating little eye which at times seems to twinkle, if, indeed, it does not positively wink. The Pink is such a cheeky, bonny little plant, with a definite personality. Yet in its years in the shadows it was only seen in cottage gardens in rural retreats. The rustics of the countryside never deserted it and have always been loyal to the great charm and shy beauty of the most adorable of all plants.

I am not a prophet nor am I the son of a prophet, but I will give you this information as a guess. The Pink will become an aristocrat in the Floral Kingdom. It will not be considered the poor relation of the Carnation in the future. It is now making great progress and being developed into one of the best of all garden plants, simply because it has every virtue. At every season of the year it is attractive and possesses all those qualities which make a good garden plant.

You can divide the whole Pink family into four distinct groups, viz.:

The Garden Pink which is the old original race, also the mother of all the other types.

Laced Pinks or sometimes called Black and White or Scotch Pinks. (Fig. 155.)

Allwoodii Pinks, which are the Perpetual Flowering Pinks and are half Pink, half Carnation. (Figs. 153 and 154.)

Show Pinks which are a modern development from the Herbertii race of Pinks which were a development from the old Laced Pink. (Fig. 152.)

Of course, there are several other so-called types or races but these are selections and the above include all except those species of Dianthus such as the *Chinese Pink* or Indian Pink, which are a distinct race to our British strains of Pinks; they are not hardy and merely an annual flowering Dianthus.

More than all this, you have in the Pink family endless variety in types and form, from the Pigmy Alpine species to the large-flowered modern Show Pink. They rival any other plant in their range of colours in harmonizing shades and different forms in the flower itself.

I do not propose to give you the whole history of the Pink because you can study that so much better in a book than by listening to me. It is very plain that many Dianthus species and varieties have helped to make this adorable plant, but the most important parent is the 'Old Fringed White' Garden Pink which, I should say, was a direct offspring from *Dianthus plumarius*. 'Old Fringed White' was the mother of that

wonderful plant 'Mrs. Simkins' and I used it as the mother of my Dianthus 'Allwoodii,' which is the Perpetual Flowering Pink. It is a curious fact that all types of Pinks when crossed on to Allwoodii seem to bestow their own particular charms of colouring and markings upon them, so that in the modern perpetual flowering form we are now getting back the old-fashioned colourings, such as you see in Laced Pinks or Show Pinks. All those old colourings are the ones we see in the earliest types of the flower—in fact, I do not think that any charms the Pink possessed in the past are not to be inherited in the modern forms. I do not believe that any of the jewels of the past have been lost. This, to my mind, is one of the greatest wonders in Nature. Nothing really good is ever lost.

With these Allwoodii or Perpetual Flowering Pinks, it is wise to cut the flowers with long stems because this keeps the plants compact and shapely. Also, the more flowers you cut so many more you will obtain, and if the plants are attended to and have a little artificial assistance they will show practical appreciation. All these recent developments have enabled the plant to keep in step with the progressive tendency of the modern horticultural world of to-day.

Pinks were my first love when I had a garden of my very own, some 2 yards square, and to-day I think I admire them the most. They were the only plant I would grow in my garden on the Wolds of Lincolnshire. They were mainly the 'Old Fringed White' with its rather vulgar rose-pink colour sport, but this rose-pink form seems to have disappeared. I have often tried to get plants of these without success, yet there must be some in cottage gardens.

THE SECRET OF POPULARITY

When we study the past history of the Pink we find that, whenever it has had one of its occasional vogues of excessive popularity, the reason has been the evolution of some new type, such as the Mule Pink or the Laced Pink. And the present wave of popularity has been brought about by the introduction of the Perpetual Flowering Pink, Dianthus 'Allwoodii.' It was introduced in 1918 and is a hybrid between the old Garden Pink and the Perpetual Flowering Carnation. As any thinking person will realize, to blend two distinct types of Dianthus was a feat not easily accomplished because of their distinct habits of growth. However, this is too large a subject to go into here. How I did eventually succeed I have narrated in my various books. The fact remains that the evolution of Dianthus 'Allwoodii' has completely changed the whole aspect of the plant. It must be evident to all that a plant in your garden which will continue to produce such fascinating flowers from spring to autumn must eventually come first, if it does not actually supplant the older types of Pinks which only bloomed every spring.

Another influence which Dianthus 'Allwoodii' has had upon the Pink world is that when they are cross-fertilized with other types they invariably predominate in habit of growth, so you have to-day Perpetual Flowering Laced Pinks or, again, the Show Pink, which was mainly the Herbertii strain of Pinks, giving it the exquisite form in the flower of the former with the constant flowering quality of the latter. This sort of thing is taking place in the whole Pink world.

I am resisting the temptation to give a list of the various varieties, because you can see these at nearly all the Flower Shows or get them from the catalogues of a specialist. I do not think there is a single bad variety, so that it is chiefly a matter of selecting a colour.

PERFUME

A flower with the extra attraction of fragrance seems to me to have a soul—at least, it endears itself upon you. There is something more about a living flower's perfume than those concocted by chemists from coal tar which you buy in a bottle.

I suppose there are as many kinds of natural perfumes as there are kinds of flavours—the one appeals to the body and the other to the mind; that is the great difference which we appreciate.

However, the aroma of the Pink is unique. Who amongst us have not walked down their garden path on a warm summer evening, when the dew is rising, and have not revelled in the waves of spicy fragrance from a clump of Pinks, which is occasionally lost for a moment only to be found with greater joy. There is nothing crude and vulgar in the perfume of a Pink—it is delicate and refined. Few pleasures of a garden are greater than those refreshing waves of fragrance given off by the homely little Pink, which we break as we walk down our garden paths. That is why the Pink has so many friends.

CULTIVATION

The cultivation of the Pink is so easy and simple that this fact has been to some extent its worst enemy. The inexorable law in the world of Nature is that "you reap what you sow," and you do not get returns from Nature unless you work for it. In other words, the Pink has all too often been the most neglected plant in the garden. Little or no cultivation or attention was bestowed upon it and it was expected to grow in the same soil in the same position in the garden from year to year. I contend that such treatment is unreasonable. Like other plants it appreciates deep cultivation, also the introduction of a little new soil. Its propagation, also, was all too often the rough and ready method of pulling all old plants apart, sticking a portion in the ground—invariably in the same position and soil that the mother plant came from—and stamping it in with the heel. Such treatment is not sensible or fair gardening. With an audience such as this I need not go into details of cultivation; besides, all this information can be gathered from books.

However, certain essentials do stand out. The Pink is the first cousin to the Border Carnation and when I gave my lecture upon these last year I pointed out that their natural habitat was the limestone mountains of southern Europe and that from this information you could make deductions and so discover the plant's essential requirements in the matter of a medium soil, a free drainage, a good light and plenty of air circulating around them and so on. I know you cannot have a mountain in your garden but you can give them similar conditions, which will be absolutely perfect for the Pink and all its hybrid races. This I will emphasize: that if you give your Pinks favourable conditions in your garden, few, if any, plants will give you such rich returns for so long a period, but note this

point—in their natural habitat it is limestone they prefer so we use these chippings in our soil. They are not exacting in the kind of soil they prefer to grow in, except that they abhor peat and leaf mould; also, like all upland plants, a free drainage in the soil is essential as well as a moderately rich soil. You will find that if you study and help the Pink by giving it, for instance, a little artificial feeding in summer, it will give you a quick and good response, and if it is so favoured you will be surprised at the result.

PROPAGATION

A slip was the old term for a growth which we to-day would call a cutting. The old type of Garden Pink produced a wealth of blooms in June, so the slips were the growth pulled off from the base of the flowering stem and they were trimmed and inserted in soil and sand in cold frames in July and August.

Pipings was another old-fashioned method of propagation. They were simply side growths in a half-matured state pulled out at the socket with a sharp jerk. You could do this with these old kinds of Pinks which, after flowering, went into a semi-dormant state. Our present-day perpetual flowering varieties grow too quickly to enable us to make pipings, so we imitate them by making cuttings which are not pulled but cut in order to sever the joint. A cutting is a growth from the base of a flowering stem some 3 inches long and cut just under the joint with an extremely sharp knife. These are inserted in pure sharp sand and will produce roots in a matter of a fortnight to three weeks if kept moist and shaded from the strongest sun.

The best method of propagating Pinks so as to enhance their vitality and therefore improve them and build up the plants' health and strength of constitution, is by layering, because the young growth is not severed from the parent plant until it has emitted roots and so it can keep itself nourished.

The distance to place the young plants naturally greatly depends upon the variety. A well-grown plant of a Pink will exceed 18 inches across the plant in its second year, so never plant closer than 9 inches between each plant.

Another interesting fact is that plants of Pinks much prefer to be planted in the autumn to any other season of the year, in fact you can transplant quite large plants with success in the autumn.

YELLOW PINK

Generations of gardeners, from the Middle Ages when the first Yellow Border Carnation was raised, have endeavoured to obtain a double-flowered Yellow Pink. At last it has been achieved. I raised it from *Dianthus Knappii*. The importance of all this is the influence this new colour will have upon the Pink world. Seeing that we already have browns, black and red shades, you can imagine the great possibilities of the future. But, unfortunately, Nature has seen fit to protect this jewel of the Floral Kingdom because it only occasionally produces any pollen so that progress will be slow.

Another great attraction to many of these modern forms of Pinks is

that you can get quite excellent results from packets of seed which breed true in the various types and forms, which is extraordinary considering all the variety in forms and habit, also both as single and double flowers.

There are also many types of biennial Pinks which we, in the horticultural trade, call Dianthus. These are so beautiful and so numerous that it is impossible to deal with them now. Some day I should rejoice to talk about them, because they are the forms which are so highly appreciated in the new world and they have originated in this country. However, pictures impress more than words; also you can see the difference in the various forms and types in pictures better than I can explain in words.

PINK SHOWS

Also Show Pinks; of course, any good flower of any kind has sufficient merit to be exhibited at a Show, but certain types are better than others. Pink Shows need not be large lavish affairs, in fact a Pink looks out of place at a large Flower Show. Its real home is in the garden, but the perfect colourings and markings such as we see, especially in the very beautiful Laced Pinks and Show Pinks, are seen in detail and appreciated the more on a Show bench.

The race of plants known as Show Pinks, which in a few years have become so popular, and gained so many high awards, are really a hybrid race developed from those beautiful old kinds known as Herbertii Pinks, which so many of us maintained had the Border Carnation strain in their make-up. These we hybridized with our Allwoodii strain of Pink and this cross has revealed some exquisite plants in form of flower and unique colouring; also they have a compact habit of growth. However, the glorious varieties in all kinds have added so much to the plant's popularity.

ALPINE PINKS

If I did not mention these happy little bright fellows, which are such an attraction upon any rockery or crazy pathway during every day of the year, I most certainly should be written to. I always associate them with the species named Dianthus, and the influence of our Allwoodii Pinks have made these delightful hybrid forms perpetual flowering. I think we will leave closer examination of these for another time.

NOTES FROM FELLOWS

Yucca Whipplei

THIS fine plant is flowering again at Bodnant.

It grows at the foot of a wall with a shelter of glass high over it to keep the wet off in winter.

The spike is 14 feet high, closely packed with white flowers, and is a magnificent sight.

The blooms of the plant that flowered at Bodnant two years ago were self-fertilized by hand, and there were four or five pods that ripened. Seeds from these were sown, and thirty or forty seedlings came up. These seedlings were all, however, of quite a different type from the parent, having much broader leaves, although there was no other Yucca anywhere in the vicinity.

The one now flowering is a seedling from one of the same species which flowered seven years ago,* and before the one which had the broad leaved progeny.

I enclose a photograph (Fig. 150) that I have just had taken of this remarkable plant.

ABERCONWAY

Bodnant.

Rheum Alexandrae

This rare plant is flowering again at Bodnant this year. (Fig. 151.)

Its curious bracts are a pale greenish yellow tint.

Unlike most Rheums, it is a difficult plant to cultivate, and is shy flowering. This plant has not flowered for three or four years. On the last occasion, seedlings that it did produce did not survive.

I have not seen it growing elsewhere in this country except at the Edinburgh Botanic Garden, but it is an insignificant plant when not in flower, and can very easily be mistaken for the common Dock.

It is a plant, I understand, which is most abundant on the high mountains in China, and covers the marshy moorland with millions of its interesting spikes.

ABERCONWAY

Bodnant.

Rehderodendron macrocarpum

Rehderodendron macrocarpum was first found in 1931 in the Szechuan province of China: within the next five years eight other species of the genus were discovered.

In the autumn of 1938 MR. W. H. JUDD of the Arnold Arboretum sent me a small plant, about 1 foot high. I planted it at once in the open in this Northamptonshire garden and it has proved to be perfectly hardy, apart from a little browning from late spring frosts. The tree is now 12 feet high and it flowers freely though it has not yet borne fruit. (Fig. 156.)

The flowers are white with an occasional powdering of pink, grow in racemes and are sweetly scented. The tips of the 10 stamens are yellowish-brown in colour, and 5 of them project some way beyond the petals. The young wood is red as is also the midrib of the leaf which

* EDITOR'S NOTE.—This plant was figured in the JOURNAL for December, 1944 (Fig. 155), and is described in a note by Lord Aberconway on p. 355 of the same volume.

is glossy on the upper surface and pencilled in red along the margin. The tree is sparsely leaved.

I have a letter from MR. JUDD written in 1945, about a year before he died. He states that he sent five other plants to England, one to Sweden and one to Germany: it would be interesting to know whether they have all survived. He says that he planted some out of doors at the Arnold Arboretum in 1938 (which was an unusually mild winter there) and that they all died. He also remarks that it was strange that such collectors as FORREST, WILSON and FARRER never came across the genus: though WILSON is known to have passed under the type tree by the roadside near a small temple midway up the Sacred Mount Omei.

He was not sure that the plants sent out were the species described as *macrocarpum* but so far as they can tell the authorities at Kew believe that my plant is the true species. Another of the plants which MR. JUDD sent is now at Lamport Grange, Northampton: the leaves and stems of his plant show considerable variation from those of mine.

I have been unsuccessful in propagating it either from cuttings or layers.

When shown by MR. G. H. JOHNSTONE in 1947 it was given an Award of Merit.

OLIVER E. P. WYATT

Maidwell Hall,
Northampton.

Erica umbellata

Introduced from Portugal by MR. W. E. TH. INGWERSEN some 30 years ago, this beautiful heath was brought into prominence by an Award of Merit granted it in 1926. It has become well established in gardens where heaths are grown, but a reputation for tenderness has no doubt hindered its progress. On this point our experience proves it capable of enduring an average winter without injury. Indeed, the only occasions on which our stock suffered casualties were those a few years ago when we had a series of zero frosts, which, incidentally, killed a good many native heaths. Like many of its kind it should have an elevated, dry position, rather than one conducive to a soft growth, and there it will stand quite as much frost as, say, *E. australis*—perhaps more.

With a slender and wiry growth, making a cobby, dense little bush of about a foot, with an inclination to be semi-prostrate, *E. umbellata* has fine linear leaves of a gentle moss-green with a slight glaucous tint. The flowers, borne in umbels, usually of twos, fours or eights, as in *australis*, are unique among hardy heaths in being almost globular, with an abruptly contracted mouth. From this latter protrudes a wisp of purple anthers in sharp contrast with the clear rose of the corolla, in which there is no trace of the prevailing blue-purple of the genus. Although these blooms are small they are produced so abundantly on the many lateral shoots as well as the ends of the twigs that a plant puts up a good mass of colour. Moreover, as the main flowering season covers May and June, this colour is very useful in the heath garden, for the spring bloomers are then over and those of summer hardly begun. A white-flowered form has been reported, and there may be others, but

all plants we have raised from seed have come remarkably true to the colour described. As an alternative, increase by cuttings is not difficult.

A. T. JOHNSON

Moisture and Colouring

Campanula Poscharskyana is curiously transformed this year. Normally it is a useful plant with its profusion of stars a little diminished by their pallor and strong rather than attractive stems.

This year the plant is a thing of beauty and two small changes account for the difference. The pale stars are now almost a blue—as blue as most garden plants that are not true blue and perhaps bluer than any other Campanula—and the creeping stems are thinner and have an attractive rosy glow. In some cases the glow is deep and the end of the flowering stems are coloured purple.

Now this has happened once before and it is interesting to seek analogies. The last time it happened was during the extremely wet summer of, I think, 1946. Certainly this spring and winter have been among the wettest on record and it would be interesting to see if there is any connection between surplus moisture and red pigmentation.

Two plants that show the same variation are *Sedum spectabile* and *Sedum Ewersii* (I refer to the species as grown at Wisley). The colour of the florets in both these plants varies between lilac in a dry season and rose in a moist one. *S. Ewersii* exhibited a purple colouring of the flowering stems during 1946 and during the damp autumn of last year.

It is too early to note whether they will be affected this year but it is interesting to note that *Sempervivum Schlehanii* is darker than usual, rubella (a florist's name), a variable plant, is this year almost as dark as *Schlehanii rubrifolium* and that *triste* and the green varieties all show much red pigmentation at the tips of the rosettes.

The gain in effect in the case of the Campanula and *Sedum Ewersii* is so striking that it is worth while experimenting with them in moist or even boggy spots to see if it is a matter of situation or of climate only.

BISSETT LOVELOCK

Variations in Trillium grandiflorum in Southern Ontario

While I do not wish to suggest that the glorious show put on by these flowers in Ontario woodlands in May is to be compared to that provided by primroses or bluebells in English woods, it is a fact that the Trillium show is the most spectacular that we have. In woodlots that are far enough from " the madding crowd " the plant thrives wonderfully and holds its own, but the fact that the easiest way to pick the flower is to take the whole plant is its undoing in places near a large centre of population. In these places it soon ceases to exist.

That considerable variation occurs in many wild plants is apparent to the most casual observer. The object of this note is to draw attention to the interesting and often spectacular variants that may be found among the flowers under discussion: more particularly to emphasize the local nature of these variations.

In some woodlots all plants of *T. grandiflorum* are what may be regarded as typical, that is, they have sessile leaves and petals that are white. In other woodlots, sometimes only a mile away and under apparently identical conditions most unusual variations occur. All flowers of *T. grandiflorum*, including the variants to be mentioned later, acquire a rosy tinge with age.

The finest stand of typical plants that I have seen grows in what may be termed Woodlot A. The following figures, an average of twelve plants picked at random, are an indication of the size of the flowers.

Leaves—120 mm. × 89 mm., pedicel—58 mm., sepals—51 mm. × 20 mm., petals—69 mm. × 40 mm. Individual plants growing under ideal conditions often exceed these measurements.

A diligent search over the entire ten acres of Woodlot A revealed only one plant that was not typical. It had one petal with a median stripe of green 1·5 mm. wide.

In Woodlot B possibly only a mile away as the crow flies, and under apparently identical conditions a very different stand of plants is to be found. In addition to about 25 per cent. of typical plants the following variants were noted :—

(*a*) White flowers with petiolate leaves.
(*b*) Green colouring on petals, varying from a narrow median line to entirely green petals, on both sessile and petiolate leaved plants.
(*c*) Leafless plants with greatly enlarged sepals, including a parti-coloured double.
(*d*) Flowers with six or nine petals. These doubles had green or green-striped petals. (All-white doubles occur in Ontario but I have no note of having seen one in this woodlot.)
(*e*) One plant with two very wide green-striped petals, and three sepals.

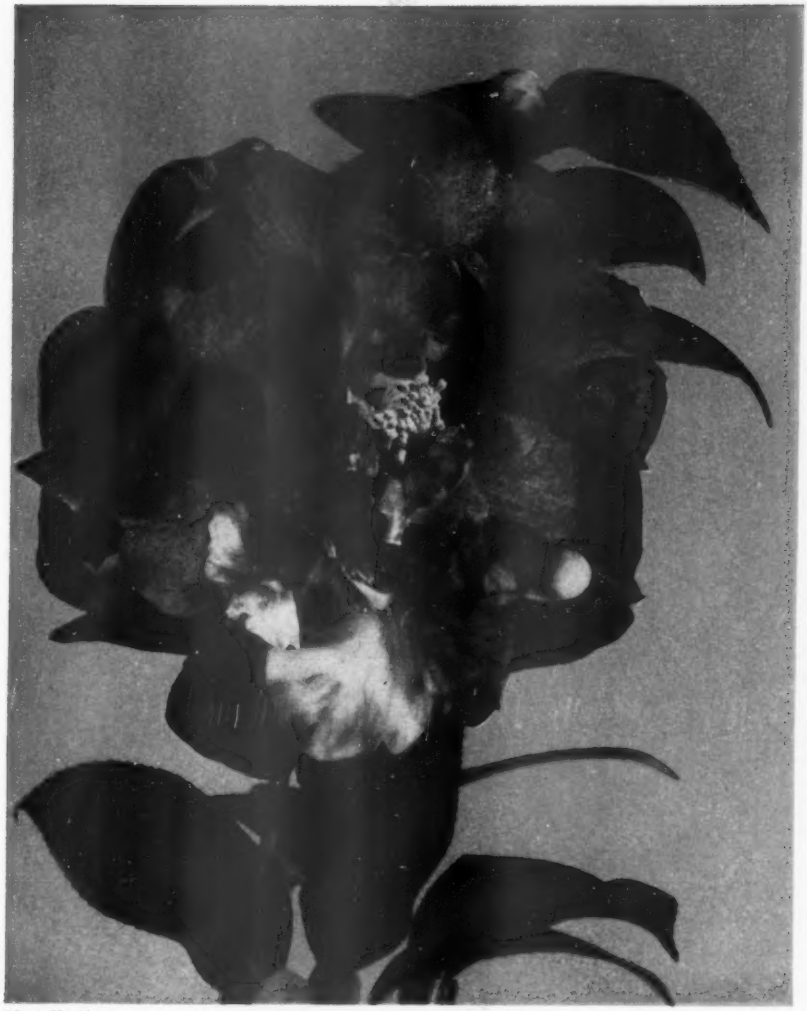
One often sees two distinct variations coming from the same root-stock. I am firmly convinced, although to date I have not made any observations that are beyond doubt, that given plants vary in different ways from year to year.

The area in which the plants referred to grow, about one hundred miles west of Toronto and forty miles north of Lake Erie, was originally a magnificent stand of White Pine sparingly interspersed with Oak, Hickory and American Chestnut. When the pine was cleared, on land that was not suitable for farming, there grew up a fine stand of the hardwoods of the district. This, with the exception of Chestnut, still exists. The soil is a sandy gravel of glacial origin containing many boulders of pre-Cambrian age, some of which, outcropping and moss-covered, add beauty to the scene. At a depth of from 200 to 300 feet under the surface of the glacial drift the bedrock is a Silurian Limestone.

The forest soil to a depth of a foot or more is a gardener's joy, a rich black vegetable mould lying on, and mingling with, a mellow, sandy gravel, well-drained but seldom dry.

WILLIAM MILES

Ingersoll, Ontario, Canada



Photo, Huggins

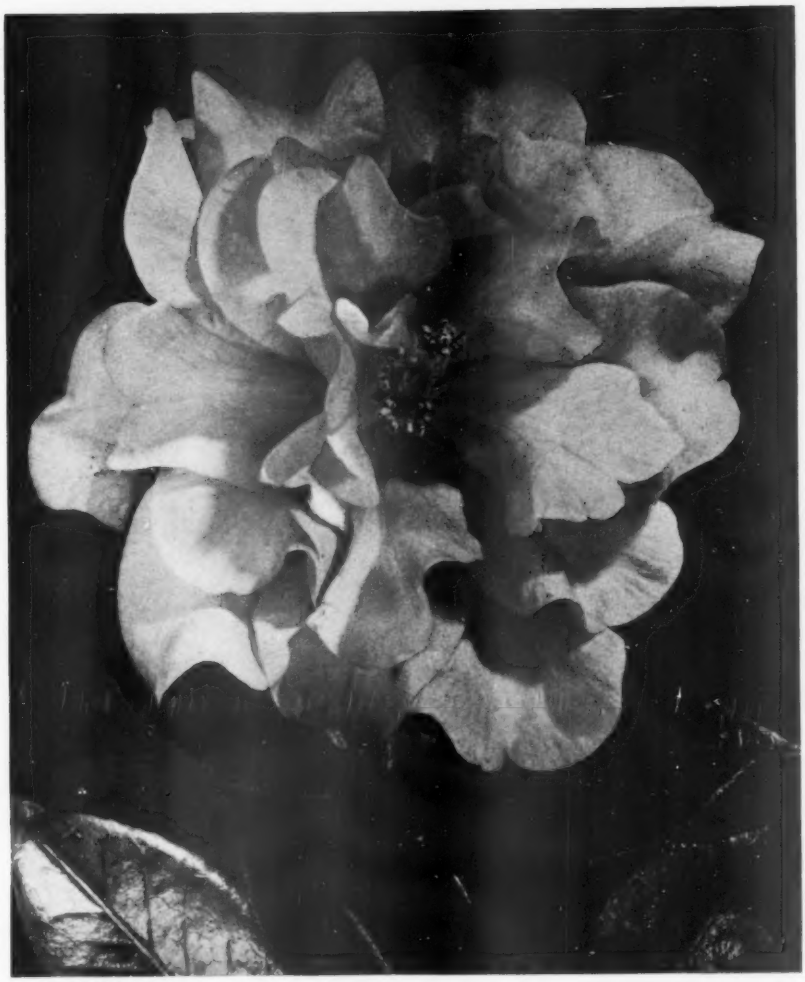
NEW VARIETIES OF CAMELLIA RETICULATA

FIG. 147—*Camellia reticulata* var. 'Chang's Temple' (See p. 303)

Photo, Huggins

NEW VARIETIES OF CAMELLIA RETICULATA

FIG. 148—*Camellia reticulata* var. 'Noble Pearl' (See p. 304)



Photo, Huggins

NEW VARIETIES OF CAMELLIA RETICULATA

FIG. 149—*Camellia reticulata* var. 'Large Pink' (See p. 304)

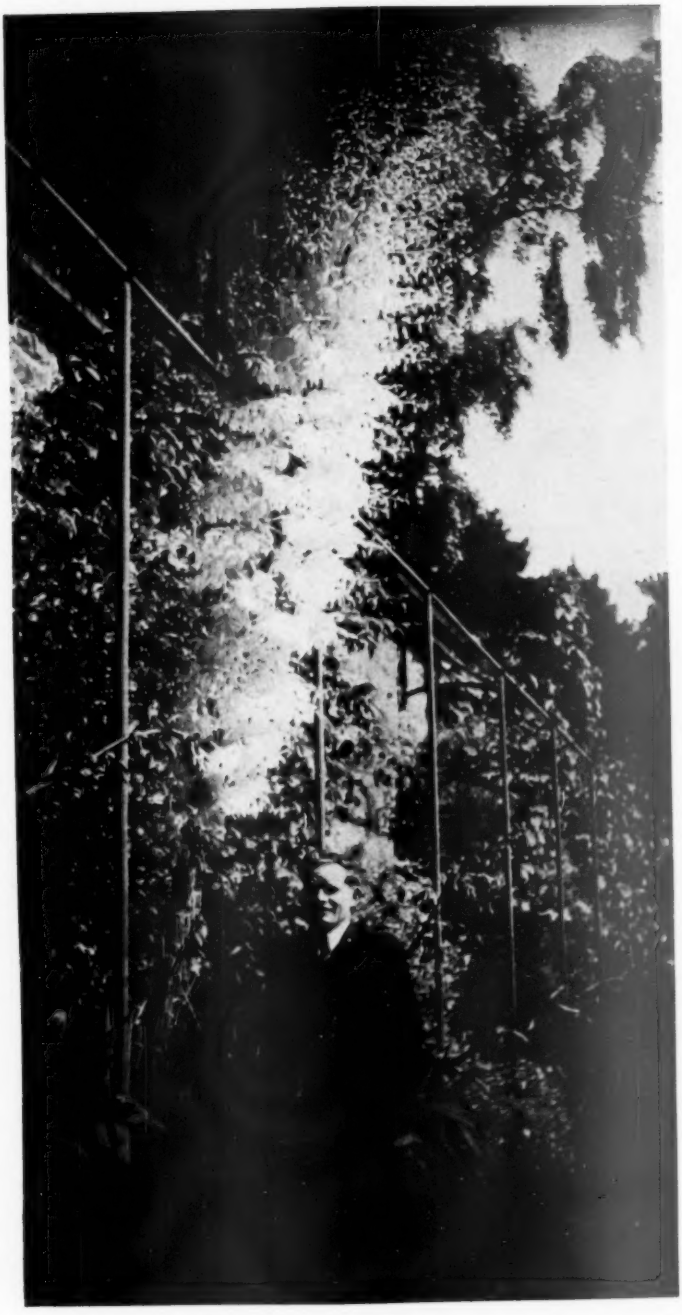


FIG. 150—*Yucca Whipplei* growing at Bodnant, N. Wales (See p. 313)

FIG. 151—*Rheum Alexandrae* growing at Bodnant, N. Wales (See p. 313)

Photo, Abbing

PINKS

FIG. 152—The Modern Show Pink. Note the perfect form of the flowers

Photo, Abbing

PINKS

FIG. 153—The Perpetual Pink 'Allwoodii'

Photo, Abbing

PINKS

FIG. 154—Single-flowered 'Allwoodii.' Note the waved petals

Photo, Abbing

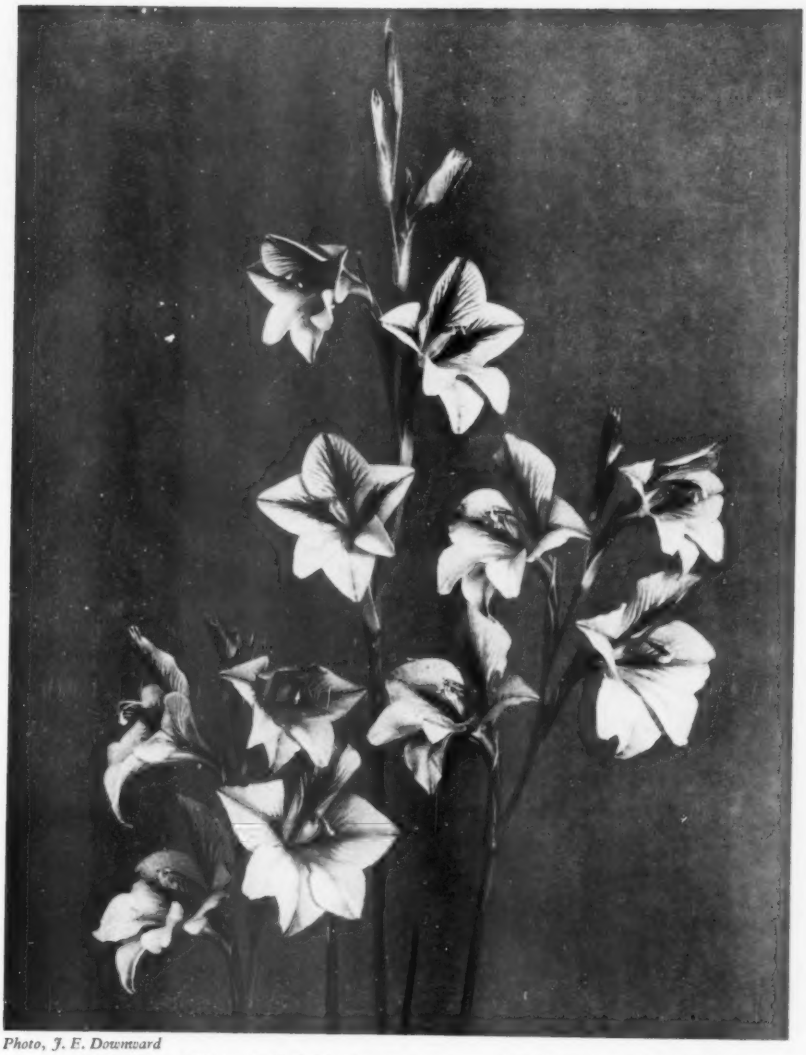
PINKS

FIG. 155—The modern form of the "Laced Pink"

Photo, Henry Cooper & Son

FIG. 156—*Rehderodendron macrocarpum* growing at Maidwell Hall, Northamptonshire

(See p. 313)



Photo, J. E. Downward

FIG. 157—*Gladiolus* 'Christabel' **A.M.** April 17, 1951. Exhibited by Mr. T. T. Barnard

(See p. 332)

Photo, Huggins

FIG. 158—*Camellia reticulata* var. 'Large Crimson' (See p. 304)

NEW VARIETIES OF CAMELLIA RETICULATA

Photo, Huggins

FIG. 159—*Camellia reticulata* var. 'Lion Head' (See p. 304)

PEACHES AND NECTARINES

J. Wilson

ESTABLISHED TREES GROWING IN COLD HOUSES

DURING the recent war interest revived in the growing of Peaches, both in cold houses and in the open. In common with Grapes, the present-day conditions make it necessary for many owners to tend their own trees, and it is hoped that the information contained in these notes will be of some assistance to those possessing only a limited knowledge of the subject.

Generally speaking, Nectarines are rather less satisfactory than Peaches when growing in the open, but for the purpose of these notes their cultivation is identical.

It is assumed that the trees are well established, fan-trained and growing under good conditions in a suitable house. A common error with regard to Peach trees growing both under glass and in the open is that frequently insufficient space is allowed for their full development—two trees growing where there is only room for one, with the consequent result that they need cutting back severely to confine them to the available space. This is the worst possible error, as, in common with all stone fruits, fan-trained Peaches object to being pruned severely; the less the trees are cut by a knife or secateurs the better.

It is considered that the best mode of presenting this information is a detailed account of the tree's requirements during each month of the year.

January.—In those instances where Peach and Nectarine trees have not been pruned and trained, or the house cleaned, this should be done at once before the buds begin to swell. (See December notes.) Maximum ventilation should be the rule on all favourable occasions during the present month.

February.—Unless the weather is exceptionally severe the buds should now be swelling, but ample ventilation is still advisable until the flowers begin to unfold, at which stage frost must be excluded.

Although not absolutely necessary to the welfare of the trees, at this stage a light syringing about noon should prove beneficial on sunny days. See that the border is thoroughly moist, and at no time should the trees be allowed to suffer from lack of water.

March.—During an average season, Peach and Nectarine trees growing in a cold house should be in full flower towards the end of this month. Control the ventilators in such a manner as to induce a free circulation of air without draughts, and when possible maintain a day temperature of about 45 degrees Fahrenheit. If bees are not present, steps should be taken to hand-fertilize the flowers; a rabbit's tail tied on the end of a short bamboo cane passed from flower to flower is the best means of accomplishing this. Gently misting the flowers with tepid water on warm, sunny days will greatly assist the "setting" of the fruit.

April.—Immediately the flowers fade syringe the trees with water about mid-day during sunny periods. Create a moist atmosphere by damping the borders, walls and staging. The frequency of this operation will depend upon outside conditions. During warm, sunny periods

twice a day would not be too much, on the other hand during a cold, dull day it is inadvisable to do any damping.

When the young green growths are about half an inch in length, gradually reduce their number; carry out this operation (known as disbudding) in three stages at about ten-day intervals. During the first thinning remove the weakest and badly placed growths, taking care to retain the best situated one nearest the base of the shoot (from which these growths arise), also the one at the apex.

Where the trees have "set" a large number of fruits it is advisable to remove a portion of the surplus as soon as these have reached the size of green peas. At this stage take off all under-sized fruits and, in those instances where two are growing close together, remove the worst placed one. Do not thin too drastically at this stage.

From now onwards as the sun increases in power syringe the trees vigorously twice daily as a means of discouraging Red Spider (probably the worst pest of these trees).

May.—In the case of fully developed trees carry disbudding a stage further by removing the remainder of the surplus shoots, retaining only those referred to in the April notes. The growth at the apex of the shoot is allowed to develop until five adult leaves are formed, then the growing point should be pinched and all subsequent growth at one leaf. On young trees similar leading growths should be allowed to develop to their full extent in order to extend the tree, and it is also advisable to retain a few intermediate shoots for the purpose of furnishing the spaces between the main branches. At this stage no time should be lost in tying in the retained shoots immediately this becomes possible, and at intervals as development continues.

June.—In order to keep the trees free of pests the foliage will require thorough syringing both in the morning before the sun gains much power and again in the evening towards sunset. Make certain the roots do not suffer from lack of water; during warm spells maximum ventilation day and night is advisable. Continue to regulate and tie in the young growths as these develop, and where surplus fruits exist these should be gradually reduced to the required number when it can be ascertained that these have "stoned."

Thin the fruits to about 9 inches apart for Peaches, rather more can be retained in the case of Nectarines.

Should the growth of the tree indicate that some assistance is necessary the present is a good time to supply nourishment. Liquid manure or a reliable proprietary manure specially prepared for fruit trees should be given according to instructions.

July.—Continue to train the developing young growths. Daily syringing should be carried out except when weather conditions are unfavourable, but should cease for a time when the fruits of early varieties such as Peach 'Hale's Early' and Nectarine 'Early Rivers' show signs of ripening, which is usually towards the end of the month. Before the fruits become soft they should be exposed to maximum sunlight by tying back any overhanging foliage, or by fixing a large wooden label behind the fruits.

August.—As soon as the fruits of the earliest varieties of both

Peaches and Nectarines are gathered cut out as much of the old bearing wood as can be spared, except that needed for extension, regulating the new shoots in order that they can become thoroughly ripened. Continue to syringe the trees twice daily and, except where these are unduly vigorous, give a final dressing of some approved fertilizer. From now onwards afford maximum ventilation both day and night.

September and October.—Syringe the trees on favourable occasions during the morning only, and do not allow the roots to suffer from lack of water. Except where it is known that the soil contains enough lime, the trees should benefit from a dressing of hydrated lime applied to the surface of the border, at the rate of about a quarter of a pound per square yard, and watered in.

November.—The leaves will now be falling from the trees and if attacked by Red Spider should be collected periodically and burnt. Maximum ventilation is still necessary to rest the trees and assist in thoroughly ripening the current year's shoots. On no account accommodate other plants in the house which require the ventilators to be closed for the purpose of raising the temperature to high levels.

December.—Release the shoots from the wires, removing surplus ones which were overlooked at the time of pruning. All woodwork should be scrubbed, walls whitewashed and glass washed both inside and out. Spray the trees with a 4 per cent. Tar-Oil wash before retying the bearing shoots about 3 inches apart. Replenish the border soil by removing the top inch and replace with a top-dressing made up of good turfy loam to which a little bonemeal and sulphate of potash have been added. Maintain the maximum ventilation.

Varieties suitable for growing in cold houses can be chosen from the following :

Peaches	*Nectarines*
Hale's Early (end of July)	Early Rivers (mid. July), or
Peregrine (early August)	John Rivers (mid. July)
Bellegarde (early September)	Lord Napier (early August)
Dymond (mid. to end September)	Elruge (end August)
	Pine Apple (early September)

FAN-TRAINED TREES ON WALLS IN THE OPEN

January.—Unless the winter has been unusually mild and consequently the buds are unduly forward, it is better to leave the training and tying of the shoots until next month.

February.—During periods of favourable weather seize the opportunity to re-tie the bearing shoots before the buds become too forward. Trees should benefit from an annual top-dressing of the border as recommended for those growing under glass.

To control "Peach Leaf Curl" on Peach and Nectarine trees spray with Lime Sulphur (half a pint to two gallons of water) or Colloidal Copper according to makers' instructions, immediately the buds show pink.

March.—Peach and Nectarine trees trained on walls blossom early in the year, and consequently there is a possibility that their flowers may

be damaged by spring frosts. When the buds are showing pink take steps to give protection during the actual periods of frost by covering the trees with such materials as tiffany, or a double thickness of garden netting. Where tiffany or similar close material is used remove the covering each day when the temperature rises above freezing point. Care should be taken to secure the protective material in such a manner that the flowers are not damaged by this. Spruce shoots or similar material placed amongst the branches provide an excellent substitute for the above-mentioned forms of protection.

April.—Atmospheric conditions are often very dry when Peach and Nectarine trees bloom. When these conditions obtain it is advisable, immediately the flowers expand, to mist the tree lightly with tepid water (applied with a syringe) about noon each day during the period the flowers remain fresh, in order to assist in "setting" the fruit.

May.—Normally during this month trained Peach and Nectarine trees growing on walls are ready for the first "disbudding." Towards the latter half of the month, where trees have set a large number of fruits, treat as recommended for trees growing in cold glasshouses. At no period should the trees suffer from lack of water, but the frequency of this might be reduced by applying a suitable mulch at this period. The trees would also benefit from daily syringing, but this is not absolutely essential.

June.—If the disbudding of Peach and Nectarine trees has been carried out correctly, the retained current year's growths should be tied in as they develop, spacing them about 3 inches apart.

July.—Where syringing has been carried out this should be continued according to weather conditions until the fruits show signs of ripening, when it should be discontinued until the fruit is gathered.

Carry out the same cultural operations as recommended for trees growing under glass. When the fruits are approaching ripening stage it will be advisable to net the trees.

August.—Birds and wasps often prove troublesome in attacking the fruits of Peaches and Nectarines. Where trained trees are concerned it is an easy matter to fix nets to exclude birds, but muslin or paper bags will be necessary to protect the fruits from wasps. Every effort should be made to destroy wasps, either by trapping or, better still, destroying their nests.

September.—Prune as soon as the fruits are gathered. This operation consists of cutting out the shoots which have borne fruit, except any that may be needed for extension. If necessary, thin the current season's growths and regulate the retained ones in order that they become thoroughly ripened.

October.—Unproductive, vigorous-growing trained trees can now be root-pruned. Young trees can be lifted out of the ground and their coarse roots shortened before replanting; older, vigorous-growing trees should be partially root-pruned.

November.—Early this month is considered the best time to plant young trees of Peaches and Nectarines obtained from a nursery, provided the soil conditions are favourable. A word of warning is necessary with regard to planting too deeply; take care that trees are not planted

deeper than when they were growing in the nursery; the soil line is usually visible on the trunks of the trees. It is important that trees should be staked and tied securely at planting time wherever support is considered necessary, allowing time for the tree to settle. There should be no chafing of the tree's bark. Where it is desired to transplant trees from one part of the garden to another this operation can, with advantage, be carried out in October, just before the leaves fall.

December.—Choose favourable weather to spray the trees with a 5 per cent. Tar-Oil wash. In some instances it is an advantage to release the young bearing shoots of the tree to allow these to hang away from the wall for the purpose of retarding the buds as much as possible. The main branches should be securely tied.

Varieties for this purpose should be confined to those which are not too late in maturing such as :

Peaches	*Nectarines*
Hale's Early (early July)	Early Rivers (mid. July) or,
Peregrine (early August)	John Rivers (mid. July)
Bellegarde (early September)	Lord Napier (early August)
	Elruge (end August)

PEACHES IN BUSH FORM

There is an increasing interest in the growing of Peaches in bush form, and this method has much to recommend it, especially where the cultivator has little time, or knowledge of the necessary disbudding which must be carried out in the case of fan-trained trees. It is now realized that the Peach blossom is not so tender as we have been led to believe. The shelter of a wall or shed at not too great a distance from the trees on the north or east sides is helpful, but not essential. Fortunately trees in this form have become more plentiful in recent years, and are stocked by several of the leading fruit tree nurserymen.

The advantage of growing Peaches in bush form, especially in the case of the inexperienced, is the fact that no disbudding is necessary, and pruning is confined to the removal of any surplus or crossing branches, and dead wood where necessary, and should be carried out in May.

'Peregrine' is probably the best variety for growing in this form, in fact it is possibly the most reliable variety for all purposes. 'Bellegarde' rather later in the season can also be recommended in this form.

Generally speaking Nectarines are not as satisfactory as Peaches in this form.

Strangely enough, very good results are obtained by raising Peaches from stones ; many instances of people raising trees producing good fruits have been brought to the notice of this Society during the past ten years.

Pests and Diseases (*Red Spider*).—This is likely to be the most troublesome pest, both under glass and in the open, and is often the result of faulty cultivation, such as dryness at the root and, in the case of glasshouses, also neglect in spraying the leaves and damping of the

borders sufficiently. Should this pest make its appearance, spray infested trees with a mineral oil emulsion (White Oils) at the strength indicated for this pest, or use one of the smoke generators where glasshouses are concerned.

Aphis.—This is another pest which can occur both under glass and in the open, but if precautions are taken to apply a reliable Tar-Oil wash in December, *while the buds remain dormant*, there should be little trouble from this pest. This is also a good control for Peach Scale. However, should aphis appear while the tree is in leaf, prompt action must be taken by spraying with a Nicotine-Soap wash, choosing suitable conditions—no sun, and for the best results a temperature of not less than 65 degrees Fahrenheit should obtain.

Where temperature difficulties are experienced "Mortopal" can be substituted. In the case of those growing under glass the fumigation of the trees prior to the flowers opening should prove effective.

Peach Leaf Curl.—This if often the cause of many Peach trees failing when growing in the open, but here again there is no excuse for this malady as it can be controlled by timely spraying with Lime Sulphur or Colloidal Copper as advised in the cultural notes.

OBSERVATIONS ON VARIETAL RESISTANCE TO CHRYSANTHEMUM RUST

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INTRODUCTION

CHRYSANTHEMUM rust (*Puccinia chrysanthemi* Roze) is indigenous to Japan and China and it was unknown elsewhere until Chrysanthemums became popular as late-flowering house-plants in the countries of the West. The disease was first noted in Britain in 1895, about 100 years after the introduction of the host plant, and it was probably introduced on the cuttings and small plants which were imported in quantity during the nineteenth century to meet the need for new varieties. The next year the disease appeared in the U.S.A. and during the succeeding decade was recorded in most countries of Western Europe. Chrysanthemum rust is to-day widely distributed throughout both the north and south temperate regions (for details see, *Distribution maps of plant diseases*, Map. No. 117, 1946, issued by the Commonwealth Mycological Institute, Kew).

The first description of the fungus is probably that by MASSEE (1898) who incorrectly identified the rust as the uredo state of *P. hieracii* Mart. PLOWRIGHT (1900) designated the rust as *Uredo chrysanthemi*, as did M. C. COOKE (1906), while it was the French mycologist ROZE (1900) who first recognized the relationship to *Puccinia* and who proposed the name *P. chrysanthemi*.

During the past fifty years Chrysanthemum rust has become well established in the British Isles where it is of regular occurrence. In England and Wales the severity of the attack varies from year to year and from district to district in any one season. Generally speaking, attacks are most regular, most prevalent, and most severe in the south-west of the country and the records suggest that the effects of the disease are markedly influenced by relatively slight changes in environmental conditions.

Chrysanthemum rust does not normally cause the death of infected plants. There may, however, be serious defoliation and the depreciation in market value due to unsightly leaf blemishes, the loss of leaves, and the greatly reduced life of infected leaves on cut flowers in water may cause quite heavy losses to commercial growers.

In the hope of elucidating the factors influencing epidemic outbreaks in this country a study of Chrysanthemum rust was undertaken and in this article some aspects of the life cycle of the rust and of differences in varietal resistance shown by the host are briefly reviewed.

LIFE HISTORY

Puccinia chrysanthemi is limited to varieties of the cultivated Chrysanthemum and allied species on which two spore forms, uredospores and teleutospores, may be produced. The latter are rarely seen in Britain where the life cycle is commonly reduced to a uredospore—parasitic mycelium—uredospore succession.

The mycelium which develops from a uredospore is usually confined to the leaf tissues but severe foliar infection is sometimes accompanied by slight infection of the stems in certain varieties and occasionally of the green scales of the floral involucre. The mycelium, which is easily seen in leaf sections, is intercellular with haustoria penetrating the host cells. Branching is profuse and the large inter-cellular spaces of the spongy mesophyll become filled with a mass of hyphae. Some hyphae penetrate into the palisade layer where the ends of the hyphal branches are arranged perpendicularly to the leaf surface closely pressed between the palisade cells. When stained, the mycelium as seen in surface view of the leaf is found to radiate uniformly in a densely branching mass from a central point which becomes the centre of the uredosorus. Possibly this point is that where the original germ tube entered through a stoma. Where vascular tissue of the host intervenes the dense hyphal mass is discontinued and a few sparsely branching hyphae circumvent the vascular strand by growing between the epidermal cells and the bundle sheath and give rise to a smaller fan-shaped hyphal mass on the other side. This effect is also visible externally at the time of sorus formation when many sori appear to be divided by vascular tissue. Unbranched hyphae also extend beyond the central mass to form secondary centres of growth from which secondary sori subsequently develop. A third ring of mycelium giving tertiary sori is not uncommon and in some Chrysanthemum varieties up to six rings of uredosori may occur.

Approximately three weeks after inoculation with uredospores uredosori are produced. The hyphae at the centre of the infection zone

form a densely packed layer of cells from which the spore-forming cells are developed as a cushion-like mass beneath the lower epidermis. The increased pressure causes the epidermis to split irregularly and to expose the more or less circular mass of reddish-brown spores.

Records from approximately one hundred plants show that uredosori never appear less than 20 days after inoculation. Most sori appear after 3–4 weeks but there is much variation in the length of the incubation period in different host plants. Secondary uredosori usually develop about two weeks after the appearance of the primary sorus. There are usually fewer secondary than primary sori. The number of primary sori may or may not increase in number with increase of time after inoculation as can be seen from Table I.

TABLE I

Number of sori in relation to time after inoculation
(Date of inoculation: August 1)

Days after inoculation	Total Number of Primary Sori			
	'Mauve Favourite'	'Friendly Rival'	'Favourite Supreme'	'Majestic'
20	11	16		
22			7	
25	13	17		
26		18		
28	14	19		
32	15		8	2
34	secondary sori	secondary sori		

An experienced observer is sometimes able to detect pale green spots or semi-transparent areas marking the sites of developing sori but the appearance of uredosori is rarely preceded by any easily visible external signs. The onset of an attack is, therefore, generally sudden and during the early stages of an unforeseen infection there is ample opportunity for a rapid increase in the intensity of the attack.

The size of an average sorus is approximately 2 mm. in diameter although in resistant varieties such as 'October Red,' 'Christmas Red,' and *Chrysanthemum Makinoi* the sori are 0·5 mm. or less in diameter. Sori are at first confined to the underside of the leaf, the upper surface showing no signs of attack until the rust is well established when yellowish-green spots corresponding to the sori below may appear. Later, an occasional uredosorus forms on the upper surface.

The uredospores are unicellular and each is borne on a short stalk. They are irregularly egg-shaped and approximately 30 μ in length with a brown, echinulate wall showing three germ spores arranged equidistantly around the equator of the spore. When dry the spore has a

depression along one side of its length but in water or lactophenol mountant swelling is rapid so that the groups of spores tend to separate by a series of violent jerking movements. The spores are difficult to wet and will float on the surface of water for a long time.

After 8–9 hours' contact with moisture (experiments showed that 100 per cent. humidity was essential for germination) a viable spore may germinate by the extension of a germ tube from one of the germ pores. A second germ tube usually develops from another pore but it lacks protoplasm and soon stops growing. The first germ tube develops to a length of 500–1,000 μ during the first sixteen hours after germination and rarely shows any branching. If germinated on a Chrysanthemum leaf the germ tube penetrates a stoma, establishes contact with a host cell and then gives rise to a branching mycelium which eventually produces a uredosorus and uredospores.

Bicellular teleutospores have rarely been reported in Britain (see MUSKETT *et al.* (1931), for Northern Ireland; WILSON (1934), for Scotland) and were not encountered during the present study. According to KUSANO (1908) teleutospores are a regular feature of the life cycle in Japan but the literature suggests these organs to be only sporadically produced elsewhere. They are clearly unnecessary in Britain where the rust overwinters on dead leaves or on living plants.

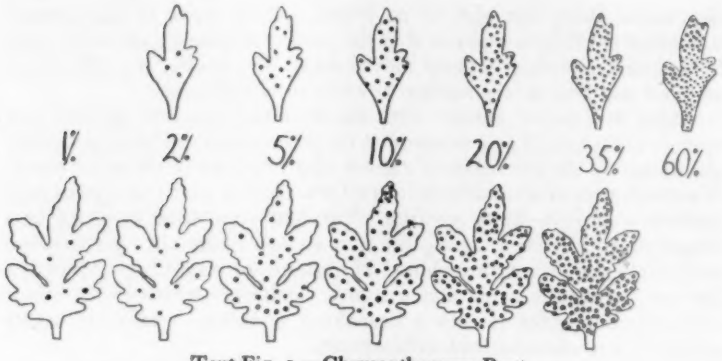
VARIETAL RESISTANCE

Observations on natural outbreaks of rust and the results of infection experiments made it clear that there were marked varietal differences in reaction to the disease and an effort was therefore made to gain more precise information on this point.

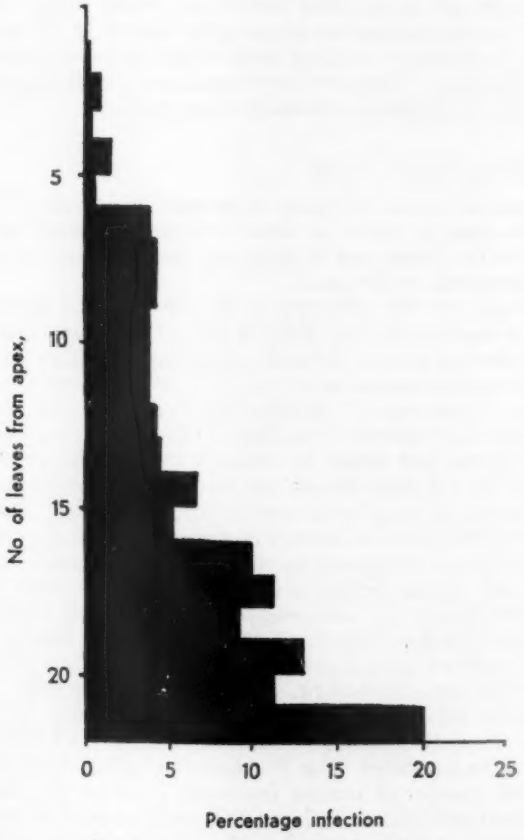
The origin of the cultivated Chrysanthemum (*Chrysanthemum hortorum*) is obscure although there is general agreement that some or all of the following species of Asiatic origin have shared in the ancestry of the florist's Chrysanthemum: *C. indicum*, *C. erubescens*, *C. vestitium*, *C. ornatum*, *C. japonense*, *C. Makinoi*, and *C. rubellum*. Of these seven species, three—*C. Makinoi*, *C. rubellum* and *C. indicum* var. *azaleanum*—have been grown and tested for reaction to rust. All proved to be susceptible. *C. rubellum* showed the most severe reaction (a reaction as severe as that given by the 'Favourite' varieties) while *C. indicum* var. *azaleanum* and *C. Makinoi* showed progressively increasing resistance.

In addition, the following species of Chrysanthemum (mostly of European and African origin) and allied genera commonly grown in gardens were tested: *C. coronaria*, *C. segetum* (Corn Marigold), *C. leucanthemum* (Ox-Eye Daisy), *C. maximum* (Shasta Daisy), *C. parthenium* (Feverfew), *C. viscosum*, *C. myconis*, *Tanacetum* (*C.*) *vulgare* (Tansy), and *Matricaria inodora*. All proved to be immune.

The usual difficulties were experienced in devising an objective method by which the reaction of different varieties of Chrysanthemum to rust could be compared. The first attempt at assessing infection was to count the number of healthy leaves per plant (or the number on several of the lateral shoots, each of which could be taken as the equivalent of a plant) but the method finally adopted was to estimate the



Text Fig. 1.—Chrysanthemum Rust.



Text Fig. 2.—Chrysanthemum Rust.

percentage leaf area covered by sori by reference to a set of standard diagrams representing a graded series of degrees of infection (Text Fig. 1). This method proved to be reasonably rapid and gave reproducible results. On each mature shoot the leaves vary in size from the small "willow leaves" just below the inflorescence to the largest foliage leaves at the base of the shoot. Rust infection frequently occurs before flowering has occurred and before all the leaves have been developed. Thus the lower leaves are most likely to become infected and investigation showed that there is a progressive increase in the degree of infection as the shoot is descended (Text Fig. 2). With the development of the inflorescence stability is attained and when making comparisons an effort was made to compare plants at the same stage of maturity. Theoretically, 100 per cent. infection could occur but in practice less than 50 per cent. infection usually resulted in the death of the leaf. Observations on this aspect of infection have suggested the percentage leaf infection does not always reflect the economic damage to the variety. For example, 'Friendly Rival' and 'American Beauty' showing 8·2 and 16·2 per cent. leaf infection, respectively, were found to show 35 and 27·4 per cent. of dead and fallen leaves. That is, the former variety was more severely damaged than the latter.

Another factor which hindered any absolute measurement of resistance of any variety was the severity of the attack but as will be seen in Table II the percentage infection method gave a reasonably consistent relative grading in two seasons in which the severity of the attack was much heavier in the second than the first.

TABLE II

Reaction of varieties in conditions favourable and unfavourable for rust

Variety	Average percentage leaf infection	
	1946	1948
'Favourite, Amber'	8·4	
'Favourite, Bronze'	8·2	
'Favourite, Golden'		28
'Favourite, Mauve'		32
'Favourite, Pink'	9·5	
'Favourite, Red'	17·0	
'Favourite, White'		25
'Friendly Rival'	4·4	16
'Finale'	1·3	12·6
'American Beauty'	0·8	8·2
'Jean Ingamells'	0·7	7·9
'Christmas Gold'	0·7	6·8
'Christmas Red'	0·5	6·1
'White Wonder'	0·5	4·8
'Louis Barthou'	0·3	6·6

Although a perfect method for assessing rust in Chrysanthemum varieties should probably take into account both degree of infection and amount of leaf damage, in the most extensive comparative varietal trial undertaken during the present investigation percentage leaf infection was the only character assessed. In this experiment the young plants were sprayed with water, dusted with a mixture of uredospores and talc, and kept in a saturated atmosphere for two days in a garden frame packed with soaked sphagnum. The plants were then set out at random in their permanent places in the experimental plot which was surrounded by a single row of plants which acted as a buffer. The infection experimentally introduced was allowed to spread naturally and the final observations made about mid-October. Two plants of each variety were grown.

The 44 varieties tested may be arranged in four groups. Those in the first are very weakly resistant to rust, while those in the fourth include the most resistant varieties encountered.

Infection 20 per cent. or more.—'Mauve Favourite' (32), 'Golden Favourite' (28), 'Ruth' (28), 'Mason's Bronze' (27), 'Balcolme Flame' (26), 'White Favourite' (25), 'G. H. Smart' (24), 'Aphrodite' (23), 'Capt. Kettle' (22), 'Godfrey's Eclipse' (21), 'Loveliness' (21), 'Cheswood Beauty' (20).

Infection 10–19 per cent.—'Golden Gem' (18), 'Dobbie's Tangerine' (17), 'Sir Austen Chamberlain' (17), 'Friendly Rival' (16), 'Monument' (16), 'Bianca' (16), 'Enton Beauty' (15·5), 'Mary Lee' (15), 'Majestic' (15), 'May Wallace' (14), 'May Wallace, Apricot' (14), 'Crensa' (13), 'Marie Marin' (13), 'Finale '(13), 'Desert Song' (12), 'May Wallace, Bronze' (12), 'C. Trueman' (11).

Infection 5–9 per cent.—'Baldock Crimson' (9), 'Bronze Paine' (9), 'Market Gold' (8), 'American Beauty' (8), 'Jean Ingamells' (8), 'Christmas Gold' (7), 'Louis Barthou' (7), 'Winter Sun' (6·5), 'Christmas Red' (6), 'Magnet' (6), 'Barbara' (5·5), 'Coldham Pink' (5).

Infection less than 5 per cent.—'White Wonder' (4·8), 'Late Delight' (4), 'October Red' (2·3).

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PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1950–51

Narcissus 'Bahram' F.C.C. April 17, 1951. As a variety for exhibition. This well-formed Large-cupped Narcissus (Division 2a) received an **A.M.** on April 6, 1948. See JOURNAL, 73, 354. Raised and shown by Mr. J. L. Richardson.

Narcissus 'Dungiven' A.M. May 1, 1951. As a variety for exhibition. A large, refined, yellow Trumpet variety (Division 1a) with a flower 4⅝ inches in diameter, well poised on a stout 19-inch stem. The Aureolin (H.C.C. 3/1) perianth segments were broad and smooth, with a slight roll; the outer ones were 1⅞ inch long and about as broad. The Aureolin (H.C.C. 3) trumpet was 2 inches long and nearly 2 inches in diameter at its reflexed and deeply indented margin. Raised and shown by Mr. Guy L. Wilson.

Narcissus 'Heaven' A.M. April 17, 1951. As a variety for exhibition. A well-formed Large-cupped Narcissus (Division 2b) with a flower about 4¼ inches in diameter, borne on a stout 22-inch stem. The white perianth segments were broad and overlapping, the outer ones being 1⅞ inches long and almost as much across. The cup-shaped corona which was ¾-inch long and 1⅞ inches across at the mouth was Cadmium Orange (H.C.C. 8/1) inside, Saffron Yellow (H.C.C. 7/1) outside, passing to yellow and white at the frilled and indented margin. Raised by Mr. A. M. Wilson and shown by Mr. David W. Gourlay.

Narcissus 'Hopesay' A.M. May 1, 1951. As a variety for exhibition. A striking but refined, very large, bicolor Small-cupped Narcissus (Division 3b) with a flower 4¾ inches in diameter borne on a 19-inch stem. The white perianth segments were smooth, broad and overlapping, the outer ones being 2⅓ inches long and about 1¾ inches broad. The pleated, saucer-shaped corona was about ⅝ inch long and 1 1/16 inch in diameter, margined with a band of Persimmon Orange (H.C.C. 710/2) about 5/16 inch deep, passing rather abruptly into pale Sulphur Yellow (H.C.C. 1/3). Raised and shown by Major C. B. Habershon, Hesterworth, Aston-on-Clun, Craven Arms, Shropshire.

Narcissus 'Killaloe' F.C.C. April 25, 1951. As a variety for exhibition. This white Large-cupped Narcissus received an **A.M.** on April 13, 1948. See JOURNAL 73, 355. Raised and shown by Mr. J. L. Richardson.

Narcissus 'Leitrim' A.M. April 25, 1951. As a variety for exhibition. A medium-sized, refined, yellow Large-cupped Narcissus (Division 2a) with a flower 4¼ inches in diameter, well poised on an 18-inch stem. The Aureolin (H.C.C. 3) perianth segments were smooth, broad and overlapping, the outer ones being 1¾ inches long and broad. The Lemon Yellow (H.C.C. 4) trumpet-shaped corona was 1⅝ inches long and 2⅛ inches in diameter at its indented and expanded mouth. Raised and shown by Mr. J. L. Richardson.

Narcissus 'Lough Areema' A.M. May 22, 1951. As a variety for exhibition. An attractive, bicolor Small-cupped Narcissus (Division 3b) with a flower 3½ inches in diameter borne on a 17-inch stem. The white, reflexed, perianth segments had an inward roll; the outer ones, which were much broader than the inner, were about 1⅝ inches long and

1⅜ inches broad. The disc-shaped corona was 1$\frac{3}{16}$ inch in diameter, green in the centre, passing to cream and margined with a narrow pleated rim of Fire Red (H.C.C. 15/1). Raised and shown by Mr. Guy L. Wilson, Broughshane, Co. Antrim.

Narcissus 'Mahmoud' F.C.C. April 25, 1951. As a variety for exhibition. This bicolor Small-cupped Narcissus received an **A.M.** on April 29, 1947. See JOURNAL 72, 405. Raised and shown by Mr. J. L. Richardson, Prospect House, Waterford, Eire.

Narcissus 'Moonstruck' F.C.C. May 1, 1951. As a variety for exhibition. This large, pale yellow Trumpet variety received an **A.M.** on April 12, 1949. See JOURNAL 74, 465. Raised and shown by Mr. Guy L. Wilson.

Narcissus 'Revelry' A.M. April 25, 1951. As a variety for exhibition. A refined, Large-cupped Narcissus (Division 2a) with a flower just under 4 inches in diameter, well poised on an 18-inch stem. The Mimosa Yellow (H.C.C. 602) perianth segments were smooth and overlapping, the outer ones being 1$\frac{5}{16}$ inches long and about as broad. The neat cup-shaped Qrange (H.C.C. 12) corona was about ¾ inch deep and 1⅛ inches in diameter at its indented margin. Raised and shown by Mr. J. L. Richardson.

Narcissus 'Salmon Trout' A.M. April 25, 1951. As a variety for exhibition. A well-formed, white-and-pink Large-cupped Narcissus (Division 2b) with a flower 4¼ inches in diameter, well poised on a stout 16-inch stem. The white perianth segments were smooth, broad and overlapping, the outer ones being 1⅞ inches long and about as broad. The Salmon (H.C.C. 412) corona was 1$\frac{7}{16}$ inches long and 1¾ inches across at its slightly reflexed and frilled margin. Raised and shown by Mr. J. L. Richardson.

Narcissus 'Sun Chariot' A.M. April 25, 1951. As a variety for exhibition. A brilliant, large-flowered Large-cupped Narcissus (Division 2a) with a flower 4⅝ inches in diameter, well poised on an 18-inch stem. The colour of the perianth segments were Aureolin (H.C.C. 3), the outer ones being 2 inches long and 1⅝ inches broad. The pleated, funnel-shaped, Orange (H.C.C. 12) corona was ⅞ inch long and 1½ inches in diameter at its indented margin. Raised and shown by Mr. J. L. Richardson.

Narcissus 'St. Keverne' F.C.C. April 3, 1951. As a variety for exhibition. This well-formed Large-cupped Narcissus received an **A.M.** on March 21, 1950 (see JOURNAL 75, 255). Raised and shown by M. P. Williams, Esq., M.B.E., Lanarth, St. Keverne, Cornwall.

Narcissus 'Woodcock' A.M. April 3, 1951. As a variety for exhibition. A refined *cyclamineus* hybrid (Division 6a) with a flower about 4½ inches in diameter, well poised on an 18-inch stem. The Canary Yellow (H.C.C. 2/1) perianth segments were smooth and overlapping, the outer ones being about 1$\frac{3}{16}$ inch long and 1⅛ inch broad. The cylindrical, Aureolin (H.C.C. 3) corona was 1¾ inch long and about 1¼ inch in diameter at its indented and slightly expanded mouth. Raised and shown by M. P. Williams, Esq., M.B.E.

Anemone magellanica A.M. May 22, 1951. A first-class rock garden perennial that increases fast and comes true from seed. On stems upwards of a foot in height, it bears deeply cut medium-green

foliage, and solitary terminal flowers of Primrose Yellow (H.C.C. 601/2). These are freely produced with numerous golden stamens, and are 2½ inches across and ⅜ inch deep. Shown by Col. F. C. Stern, O.B.E., M.C., F.L.S., V.M.H., Highdown, Goring-by-Sea, Sussex.

Aquilegia Bertolonii A.M. May 22, 1951. A tiny and very lovely *Aquilegia* that is a perfectly hardy perennial and that comes true from seed. The whole plant is only 3¼–4 inches high, and the flowers, which are large in proportion (2½ inches across, with ½-inch spurs), are usually borne singly on stems springing directly from the base of the plant. Their colouring approaches Sea Blue (H.C.C. *o* 34/1 fading to H.C.C. *o* 43/2), with green at the tips, and golden stamens, while the rather grey-green foliage forms a pleasing groundwork. Exhibited by Col. F. C. Stern, O.B.E., M.C., F.L.S., V.M.H., Highdown, Goring-by-Sea, Sussex.

Begonia 'Elizabeth Woolman' A.M. June 12, 1951. A very free-flowering, tuberous-rooted variety, producing double Marigold Orange (H.C.C. 11/2) flowers of good size and excellent form. Raised and shown by Messrs. H. Woolman, Ltd., Shirley, Birmingham.

Dianthus 'Highdown' A.M. June 12, 1951. A very bright 'pink' with neat foliage of a slightly glaucous green. The whole plant was 6 inches high, and bore about 40 flowers in a 10-inch pan. The individual leaves were about 1 inch long and the stems were somewhat branched. Each flower had a dark ring and a pale throat. The colour of the flowers was of a very even tone and is between Persian Rose (H.C.C. 628) and Roseine Purple (H.C.C. 629), while the very sweet scent added still more to their attraction. Exhibited by Col. F. C. Stern, O.B.E., M.C., F.L.S., V.M.H., Highdown, Goring-by-Sea, Sussex.

Douglasia montana A.M. March 20, 1951. A well-grown floriferous specimen of this North American alpine was shown with its small, sharply-pointed leaves forming numbers of loose rosettes and from these stand out the flowers, about 1½ inches high. Each has 5 petals coloured a dark pink around the margins, paling towards the base and centre, but with a narrow dark central streak. In contrast, the buds are a dark shade of cerise. Exhibited by C. H. Hammer, Esq., The Old Rectory, Boreham, Essex.

Euphorbia polychroma A.M. May, 1, 1951. A showy herbaceous plant from Eastern Europe, suitable for the mixed border, wild garden or the outlying parts of the larger rock garden. The young growths develop rapidly in early spring to a height of a foot or 15 inches, bearing a large number of hairy, lanceolate leaves of Lettuce Green (H.C.C. 861). Each growth bears at its tip a five-rayed inflorescence made up of minute flowers surrounded by a quantity of ovate bracts varying in colour from Dresden Yellow (H.C.C. 64) through citron to pea green. Exhibited by Mrs. Birchenough, Stour House, Sturminster Marshall, Wimborne.

Galanthus 'Arnott's Seedling' A.M. March 6, 1951. This large and vigorous Snowdrop is believed to be a hybrid of *G. plicatus*. It has rather broad grey-green leaves deeply channelled on the upper surface, and strong stalks bearing large flowers, the outer perianth-segments of which are over an inch long, the inner white, marked externally with broad V-shaped green blotches. Exhibited by Mrs. W. V. Mathias, Hyde Lodge, Chalford, Glos.

Galanthus 'Merlin.' A.M. March 6, 1951. This was raised by Mr. James Allen, a famous grower of Snowdrops, perhaps 70 years ago, and is thought to have arisen from a cross between *G. Elwesii* and *G. plicatus*. It is a strong grower, with broad glaucous leaves like those of the first-named parent, and very large flowers. The outer perianth-segments in the flowers exhibited were 1¼ inch long, the inner ¾ inch long, almost entirely green on their outer surfaces. Exhibited by Mrs. W. V. Mathias, Hyde Lodge, Chalford, Glos.

Gladiolus 'Christabel' A.M. April 17, 1951. A very pretty hybrid raised by the exhibitor from the cross *G. tristis* × *G. bicolor*, combining the desirable qualities of both of these South African species. It is a very slender plant with two or three narrow, strongly pleated leaves and a wiry stem bearing five or six fragrant flowers. The flower is funnel-shaped, nearly 3 inches long and 2 inches across, slightly hooded. The basic colour is near Primrose Yellow (H.C.C. 601) and the three upper segments are heavily shaded and veined with purple. Exhibited by T. T. Barnard, Esq., Furzebrook, Wareham. (Fig. 157.)

Iris attica A.M. March 20, 1951. This is a hardy species ideally suited for the rock garden. Its leaves are about 4 inches long, ½ inch wide and distinctly curved. The petals are 2 inches long and ¾ inch across and a pale yellow in colour with darker falls.

As all shallow rooting species, it thrives in any rich loamy soil and may with advantage be lifted and separated after flowering every second year. Exhibited by G. W. Darby, Esq., Rabley Heath, Welwyn, Herts.

Lewisia Howellii 'Weald Rose' A.M. May 22, 1951. A richly coloured and free-flowering Lewisia 5½ inches high with narrowly spathulate fleshy leaves 1½–1¾ inches long and ⅛–¼ inch wide. The plant exhibited had 16 branched stems, with about 12 flowers per stem, each flower being ¾ inch across. The general colour was near Spiraea Red (H.C.C. *o* 25/1) with deeper and paler flushing. Shown by A. G. Weeks, Esq., Weald Cottage, Limpsfield Chart, Surrey.

Pentapera sicula A.M. June 12, 1951. A rare plant from limestone cliffs on Monte Cofane in N. Sicily. Its flowers, foliage and habit are reminiscent of the Heaths, to which it is closely allied. The $\frac{3}{10}$-inch long bell-like corollas, constricted at the mouth, are mostly borne in heads of 4, but a few heads carry as many as 8. Their colour is near Amaranth Rose (H.C.C. 530/1), and the anthers are dark brown. The plant shown was 18 inches across and only 5 inches high; the general effect was that of a very pleasant large-flowered Heather, with a semi-prostrate habit. Exhibited by Messrs. W. E. Th. Ingwersen Ltd., Gravetye Estate, East Grinstead, Sussex.

Primula Allionii × marginata 'Fairy Rose' A.M. April 17, 1951. This floriferous hybrid is ideally suited for the alpine house. It has large flowers 1½ inches across coloured Mallow Purple (H.C.C. 630/1), with a clear white eye. The leaves are deeply dentate and are about 1½ inches long and ¾ inch broad. Exhibited by K. R. Wooster, Esq., The Hawthorns, Potman's Lane, Lunsford Cross, Bexhill.

Ranunculus alpestris A.M. May 22, 1951. A pleasant little plant from the European Alps that is in general cultivation, and a good perennial that forms neat clumps with bright green deeply cut leaves

1 inch across having a rounded general outline. The glistening white flowers with their numerous golden stamens are freely borne on individual stems of 3½–4 inches. Exhibited by Mr. Joe Elliott, Broadwell Nursery, Broadwell, Glos.

Rose 'Danish Gold' A.M. May 22, 1951. A free flowering hybrid Polyantha variety raised in Denmark by Mr. D. T. Poulsen of Copenhagen. The delightful semi-double flowers are well over 3 inches across and citron yellow in colour. Introduced and shown by Messrs. Samuel McGredy & Son, Portadown, North Ireland.

Rose 'Dorothy Anderson' A.M. May 22, 1951. A hybrid Tea variety resulting from a cross between *R.* 'Sam McGredy' and *R.* 'George Dickson.' The rich rosy-pink flowers are large and well formed. Raised, introduced and shown by Messrs. Samuel McGredy & Son, Portadown, North Ireland.

Rose 'Mrs. Inge Poulsen' A.M. May 22, 1951. A very attractive hybrid Polyantha variety raised in Denmark by Mr. D. T. Poulsen of Copenhagen. The semi-double flowers are rose pink in bud, opening out to a width of nearly 3½ inches and becoming a delicate blush pink which fades to creamy-blush with age. Introduced and shown by Messrs. Samuel McGredy & Son, Royal Nurseries, Portadown, North Ireland.

Selago Sandersonii A.M. October 24, 1950. Although rare in cultivation, this plant is of particular merit as it appears to be quite hardy in the alpine house and flowers over a long period.

The shrubby growths are terminated by spikes made up of small heads of flowers coloured a light Mineral Violet (H.C.C. 635/1). Its thin, wiry stems bear linear, acute leaves about ¼ inch in length. Exhibited by Messrs. W. E. Th. Ingwersen, Ltd., Birch Farm, Gravetye, East Grinstead, Sussex.

Tropaeolum 'Hermine Grasshof' A.M. June 12, 1951. A very striking Nasturtium raised in Germany probably about 80 years ago. The spurless, fully double flowers are bright Mandarin Red (H.C.C. 17) in colour and measure from 1½ to 1¾ inches across. Its chief use is for hanging baskets, and cut flowers last a long time in water. It may be planted out in the open during the summer and supported by short pea sticks. It will not withstand frost and needs greenhouse protection in winter, when it will flower continuously trained up supporting pillars. As no seeds are formed propagation is by means of cuttings which rarely fail to root. Exhibited by C. H. Curtis, Esq., M.B.E., F.L.S., V.M.H., 5 Somerset Road, Brentford, Middlesex.

Veltheimia capensis A.M. April 3, 1951. A very decorative South African bulbous plant, easily grown in the cool greenhouse, where it produces a basal cluster of glossy, strap-shaped leaves, undulate at the margins and glaucous beneath. Among the leaves arise purplish-mottled scapes about 18 inches high bearing dense terminal racemes of pendulous, tubular flowers of light Spiraea Red (H.C.C. 0 25/2), each 1½ inch long. Commonly known as *Veltheimia viridifolia*, and figured at t. 501 of the *Botanical Magazine* under the Linnaean name *Aletris capensis*. Exhibited by Mrs. Tracey, High Hall, Wimborne.

Wulfenia orientalis A.M. April 17, 1951. This plant was recently

introduced by Mr. Peter Davis from Asia Minor. The specimen shown had several many-flowered racemes of long, five-petalled, tubular flowers coloured Sea Lavender Violet (H.C.C. 637/1), which darkened towards the base of the tube. The leaves are of a rather fleshy texture about 4 inches long, irregularly dentate and, in common with the calyx, show a tendency to reddening at the edge. Exhibited by Messrs. W. E. Th. Ingwersen Ltd., Gravetye, East Grinstead, Sussex.

BOOK NOTES

"The Rhododendron Leaf, a study of the epidermal appendages." By John Macqueen Cowan. Pp. *vi* + 116. Illus. (Oliver and Boyd, Edinburgh and London.) 21*s*.

All who are interested in the taxonomy of Rhododendron, and are not afraid of making and examining simple microscopical preparations, will welcome Dr. Cowan's book on the "epidermal appendages" of the leaf. The "epidermal appendages" make up the familiar indumentum, consisting of papillae, trichomes and scales, and the author shows how the microscopical characters can be used to facilitate the identification of species, and to suggest improvements in the classification of the genus as laid down in *The Species of Rhododendron*, published by the Rhododendron Society in 1930. The various types of appendage are described more thoroughly, comprehensively and accurately than they have been by previous investigators, whilst the charming and convincing drawings by Dr. E. M. Knox serve not only to clarify the text, but also show that the appendages are worthy of study as objects of great beauty. There are twelve useful photographs in colour, by Mr. R. Eudall, representing characteristic types of indumentum. Financial support in publishing the book was provided by the Carnegie Trustees.

The text comprises nine chapters, followed by a bibliography and an index to the species of Rhododendron. Besides describing the appendages, the author gives a key to the species based on characters of the indumentum, discusses the possible phylogenetic relationships between the different types of appendage, whilst one chapter is concerned with the types of indumentum that occur in different habitats.

Dr. Cowan has performed a useful service in reminding us that the compound microscope can reveal important diagnostic characters that we can ill afford to ignore in a difficult genus such as Rhododendron. His book is one that will be essential to all who are concerned with the identification of Rhododendrons, as well as to those who have a general interest in the systematic anatomy of the vegetative organs of the flowering plants.

C. R. METCALFE

"Annuals for Garden and Greenhouse." By J. S. Dakers. Pp. 140. Illus. (W. H. & L. Collingridge, Ltd.) 8*s*. 6*d*.

To the making of books on gardening there seems to be no end; and my first reaction on receiving this book on *Annuals for Garden and Greenhouse*, by J. S. Dakers, from the R.H.S. Library Committee was to utter a groan; and my first impulse was to return it, saying that I was much too busy cultivating plants to waste time reading books at this time of the year. However, I did have an hour to spare and spent it in looking through this book. I have pleasure in giving my opinion shortly upon it.

Within the limits of the aim which Mr. Dakers has set himself, as described in his preface; in other words to write a book about annuals for the use of the man and woman with the small garden, and to encourage them to grow a wider range of such plants, he has undoubtedly done a very useful job of work.

The book is evidently written by a man writing from his own actual experience with these plants. There are some very useful notes on the cultivation of hardy and half-hardy annuals, and annuals for the cool greenhouse. Under the last heading there is a very useful list of plants with details of their cultivation, which ought to be extremely helpful for all amateurs with a small cool greenhouse. Other uses of annual flowers are clearly indicated, such as for window boxes, climbing plants, everlasting flowers; and, I am glad to note, a small list of ornamental grasses which are so useful for decoration purposes. There is also a small chapter on those comic plants, interesting in the garden and also as decorative subjects during the winter, Ornamental Gourds. Mr. Dakers recommends these for anyone who wants a laugh out of the garden, and that is what many of us want badly these days. Finally there is a most useful classified list of all the principal decorative annual plants.

Altogether it is a most readable, well-designed book with much information packed in a small space at a reasonable price. The illustrations are excellent, and there is a very useful index. I congratulate Mr. Dakers, and am glad to recommend his pleasant book, obviously written by an enthusiast.

A. P. BALFOUR

"Peaches, Apricots and other Stone Fruits." Justin Brooke. Pp. 163. Illus (Faber and Faber) 16*s*.

This is a newer version of Mr. Justin Brooke's previous book, *Peach Orchards of England* (published in 1948), with additional chapters on Cherries and Plums and adds very little to what is contained in the earlier work and nothing of much guidance to the commercial planter although it will be interesting to the amateur. The chief alteration, a radical one, is the change over from the use of Plum rootstocks to seedling Peach and this correction will largely nullify such experimental plantings that growers may have made. The financial information is still as scanty as before and as regards the cost of production, omits all capital costs such as land, trees, planting, equipment such as tractors, sprayers and mowers, preparation of land, manuring, picking and packing, not to mention depreciation, and provision for renewals. In Gourley and Howlett's *Modern Fruit Production* (U.S.A.), the Peach is given as having the shortest life of all top fruit trees and similar information is given for Victoria, Australia.

It is not stated whether the receipts are "net home," or subject to market deductions such as carriage, commission and tolls.

Also these figures are based mainly on the performance of seventeen trees although a large acreage is coming into bearing.

Also, one must not overlook the fact that this fruit cannot be held, it has only about one month of harvesting and sale and is most vulnerable to the depressing effect of imports from foreign countries enjoying a much more favourable climate.

The remarks about the preservation of low grades savour strongly of "Mrs. Beeton" and few people have the requisite sugar.

Research stations are urged to find a cure for Peach leaf curl. For many years this has been controlled by spraying in February with 3 per cent. lime sulphur. The book is cluttered up with numerous repetitions of every kind, and I am afraid there is not much in the Cherry and Plum additions that is new. However, I am sure Mr. Brooke is right in his principle of grassing down his orchards, but no one yet knows the best grasses to sow. Our policy is to sow wild white clover only and let the indigenous grasses come. They will probably crowd out any other variety sown in time anyhow. Perennial Rye (S.23) is said to be best for making a quick sward in low rainfall areas but is too vigorous for the West. Finally, I think commercial growers will be wise to plant Peaches experimentally at present.

All experience is too short and too scanty as yet.

W. P. SEABROOK

"Variation and Evolution in Plants." By G. Ledyard Stebbins, Jr. Pp. xx + 643. Illus. (Oxford University Press.) 50*s*.

As the title indicates, this volume of some 600 pages covers a large amount of ground. The subject matter is very fully discussed and prominence is especially given to the views put forward during the last twenty years. It is therefore a valuable text-book for botanical students and may be useful to horticulturists who desire to become acquainted with the modern views on the genetics of plants.

Dealing first with the subject of variation, the author points out that particularly in a plant with a wide distribution, different forms of the species are found to occur, each one of which is suited to a particular climate or to special conditions of the soil. Apart from such variations which may be brought about by the influence of external conditions and may be termed adaptations, changes may occur which seem to be produced by internal causes. These are called mutations. It has been found, however, more recently, that mutations can be caused by the influence of X-rays, ultra-violet or infra-red rays. Certain chemicals also, particularly mustard gas, may cause mutations. The author discusses the historical evidence for natural selection from new varieties and comes to the conclusion that mutations serve only rarely as the direct agents of evolutionary changes, but that the continuation of evolution depends on the maintenance of a sufficiently high mutation rate.

Passing on to consider the genetic systems as factors in evolution the author deals with the normal diploid character of the higher plants. This double nature of the nucleus, the controlling centre of the vegetable cell, is due to its containing the elements of the two parents which unite during fertilization. The occurrence of the less common condition of polyploidy is also discussed. This means that the elements of the male and female parents are represented by more than one set of nuclear constituents. Polyploidy has been observed to a greater or lesser degree in all groups of the higher plants

though it has not been much studied in the Thallophyta. In Ferns, however, Professor Mauton has given an account of many polyploid forms and there is good reason to believe that polyploidy has played a particularly important rôle in the evolution of the family of Polypodiaceae.

Polyploidy is, however, singularly uncommon among the Gymnosperms. Among Angiosperms it is found that perennial herbs show the highest percentage of polyploidy, a smaller proportion is found among annuals and the lowest percentage is found in woody plants. It occurs most often in hybrids of species. Polyploid forms can therefore be produced by hybridizing and may be produced by treating plants with colchicine.

Professor Stebbins has dealt mainly with recent plants, but he has given some consideration to fossil plants in discussing the rate of evolution. The chapter dealing with this part of the subject is illustrated with a number of maps showing the distribution of the plants described. Though not profusely illustrated the book contains a number of drawings which will give help to the reader.

There is a very comprehensive list of books and papers cited by the author who has produced a volume of great interest and value to all botanists. It is full of detailed information on a difficult subject and it will remain for a long time a standard volume for botanical students.

F. E. WEISS

"The Auriculas." By Roland Biffen. Illus. Pp. 164. (Cambridge University Press). 15*s*.

Since the early days of last century no work dealing exclusively with the Auricula has been published. Sir Rowland Biffen's book is the first to approach the subject scientifically. The book is written in a delightfully simple style. It necessarily contains a good deal of technical information, but botanical terms are often explained, and, though essentially a florist's guide, it is a most readable book and one that will be enjoyed by anyone who wants to know more about this fascinating flower. It treats of the history, origin and cultivation of the plant, but to auricula growers the most interesting chapters are those which deal with meal and colour, and Auricula breeding.

The author's experiments and chief interests were mainly concerned with the edged varieties. Starting with an examination of the minute structure of the green edge, he has established the fact that in every respect the character of the petal is precisely that of a foliage leaf. In a most interesting way he compares this virescent mutation with that which has taken place in other members of the Primula family.

Sir Rowland Biffen was not only a great botanist, but the was also a great lover of this flower for its own sake. "There will always be many," he says, "who can find their happiness in contemplating the mysterious haunting beauty of this, the most perfect of all flowers which human efforts have brought into existence."

C. OSCAR MORETON

"John Ray: a Bibliography." By Geoffrey Keynes. 8vo. Pp. xv + 163. Illus. (Faber & Faber.) 50*s*.

This is a sumptuous book, beautifully printed on grey paper, illustrated by three portraits, a facsimile, and the reproduction of sixteen title pages. It contains full bibliographical details of all Ray's published writings with descriptions of each. Except for a final London printing in 1769 of his *Persuasive to a Holy Life* it seems to be complete. The production is a worthy tribute to the greatest of Cambridge naturalists by one who is himself distinguished in that as in other fields.

C. E. RAVEN

"Tomatoes." Bulletin No. 77. Min. of Agric. 3rd ed. 1950. Pp. 56 Illus. (H.M.S.O.) 2*s*. 6*d*.

This bulletin has been revised by the Glasshouse Group of the specialist advisers of the N.A.A.S. under the chairmanship of Dr. W. F. Bewley, C.B.E., V.M.H., and deals very thoroughly with Tomato cultivation mainly in glasshouses but also in the open. Although indeed primarily for the commercial grower it will be useful to the amateur gardener.

The contents of this volume are copyright. For permission to reproduce any of the articles application should be made to the Council.

To Messrs. Robinson's Nurseries, Ltd., Eltham, S.E. 9, for an exhibit of rock garden plants.
To Messrs. L. R. Russell, Ltd., Windlesham, for an exhibit of flowering shrubs.
To Mr. Frederick Street, Woking, for an exhibit of Rhododendrons and other flowering shrubs.
To Messrs. J. Waterer, Sons & Crisp, Ltd., Twyford, for an exhibit of rock garden plants.

Banksian Medal

To Messrs. Kew Topiary Nursery, Ltd., Richmond, for an exhibit of clipped trees.

Award of Merit

To *Kneiffia linearis* as a hardy flowering plant (votes unanimous), from Mr. A. V. Pike, Hever Castle Gardens, Edenbridge.
To *Rhododendron* 'Amor' (*R. Griersonianum* × *R. Thayerianum*) as a hardy flowering shrub (votes 10 for, 0 against) from Mrs. R. M. Stevenson, Tower Court, Ascot.
To *Rhododendron charitostreptum* as a hardy flowering shrub (votes 9 for, 0 against), from the Commissioners of Crown Lands, The Great Park, Windsor.
To *Rosa gallica complicata* as a hardy flowering shrub (votes 15 for, 0 against), from Messrs. T. Hilling & Co., Chobham, Woking.
To Rose 'Mme. Pierre Oger' as a hardy flowering shrub (votes 14 for, 0 against), from Messrs. T. Hilling & Co., Chobham, Woking.
To *Sequoia sempervirens nana pendula* as a hardy evergreen shrub (votes 10 for, 1 against), from Messrs. T. Hilling & Co., Chobham, Woking.

Preliminary Commendation

To *Lilium auratum* var. 'Pauline Tuffrey' as a hardy flowering plant (votes 16 for, 2 against), from Messrs. W. A. Constable, Ltd., Southborough.
To Rose 'Coral' (*R. sinowilsonii* × *R. Moyesii*) as a hardy flowering shrub (votes unanimous), from Col. F. C. Stern, O.B.E., M.C., F.L.S., V.M.H., Goring-by-Sea.

Cultural Commendation

To Mr. E. Humphris, gardener to Mr. R. F. W. Cartwright, Aynho Park, Banbury, for a large specimen plant of *Mammillaria elongata*.

Other Exhibits

Armeria Welwitschii, exhibited by Dr. M. Amsler, Delmonden Manor, Hawkhurst.
Centranthus ruber coccineus, exhibited by R. Hay, Esq., Dolphin Cottage, Grayswood, Surrey.
Cistus 'Paladin' var. *semi-plena*, exhibited by Capt. Collingwood Ingram, Beneden, Kent.
Hydrangea 'Grant's Choice,' *H.* vars., exhibited by G. L. Pilkington, Esq., Grayswood Hill, Haslemere, Surrey.
Rosa alba maxima, *R. gallica* 'Belle de Crecy,' *R. gallica* 'Cardinal de Richelieu,' exhibited by Messrs. T. Hilling & Co., Chobham, Surrey.

ORCHID COMMITTEE—Mr. GURNEY WILSON, F.L.S., V.M.H., in the Chair, and ten other members present.

Awards recommended:

Award of Merit

To *Odontoglossum* 'Tordonia' var. 'Sydney' (*O.* 'Clydonia' × *O.* 'Toreador') (votes 10 for, 0 against), exhibited by S. Tharp, Esq., 10 Farm Lane, Purley.
To *Odontoglossum* 'Torican' (*O.* 'Pelican' × *O.* 'Toreador') (votes 10 for, 0 against), exhibited by S. Tharp, Esq., 10 Farm Lane, Purley.

Bronze Lindley Medal

To *Coelogyne Dayana* (votes 10 for, 0 against), exhibited by Mr. J. V. Rank, Ouborough, Godstone.

JOINT DELPHINIUM COMMITTEE—Mr. T. HAY, C.V.O., V.M.H., in the Chair, and eight other members present.

Selected for trial at Wisley

'Col. W. H. Llewellyn,' shown by Col. W. H. Llewellyn, Court Colman, Bridgend, Glam.

Other Exhibits

Seedlings No. 7, No. 3, No. 12, and No. 15, shown by C. H. B. Hawkins, Esq. Clovelly, Berkeley Road, Birchington, Kent.
'White Nylon,' Seedlings B.G. 5, A.L.B.R. 4, and two vases of mixed Astolat Seedlings, shown by A. E. J. B. Kidney, Esq., 11 Osterly Gardens, Thornton Heath, Surrey.
Seedling, shown by J. H. Hobbs, Esq., High Green, The Drive, Belmont, Surrey.

JOINT DIANTHUS COMMITTEE—Mr. Geo. Monro, V.M.H., in the Chair, and eight other members present.

Selected for trial at Wisley

'Seedling H.P. 570 B,' shown by Messrs. Allwood Bros., Ltd., Wivelsfield Nurseries, Haywards Heath, Sussex.
Laced Pink 'Evening News' and 'White Inchmery,' shown by T. T. Burnett, Esq., 18 Penns Road, Petersfield, Hants.
Mule Pink (un-named), shown by Mr. W. T. Mellows, 53 Bramley Avenue, Coulsdon.
Imperial Pinks 'Laced Superb' and 'Coral Queen,' shown by Lindabruce Nurseries, Freshbrook Road, Lancing, Sussex.

Other Exhibits

Show Pink 'Show Pearl' (**A.M.** 1950), shown by Messrs. Allwood Bros., Ltd., Wivelsfield Nurseries, Haywards Heath, Sussex.
'Ditchling Pink,' shown by Messrs. Wells (Merstham), Ltd., The Nurseries, Merstham, Surrey.

JOINT IRIS COMMITTEE—Colonel F. C. Stern, O.B.E., M.C., F.L.S., V.M.H., in the Chair, and five other members present.

Exhibits

Iris filifolia, **A.M.** (Dykes) 1915, shown by Colonel F. C. Stern, O.B.E., M.C., F.L.S., V.M.H., Highdown, Goring-by-Sea, Sussex.
Iris laevigata, **A.M.** (Christie-Miller) 1916, shown by C. W. Christie-Miller, Esq., Swyncombe House, Henley-on-Thames.
Iris × *fulvala*, **A.M.** (Dykes) 1910, shown by Messrs. M. Prichard & Sons, Ltd., Riverslea Nurseries, Christchurch, Hants.

Selected for trial at Wisley

Dutch Iris 'Blue Pearl,' shown by Messrs. R. W. Wallace & Co., The Old Gardens, Tunbridge Wells, Kent.

Other Exhibits

Iris fulva, shown by Messrs. M. Prichard & Sons, Ltd., Riverslea Nurseries, Christchurch, Hants.
Iris, Apogon hybrid, shown by H. Senior Fothergill, Esq., 12 Abercorn Place, London, N.W. 8.

JOINT ROCK GARDEN PLANT COMMITTEE—Col. F. C. Stern, O.B.E., M.C., F.L.S., V.M.H., in the Chair, and seven other members present.

Exhibits

Helichrysum frigidum (**A.M.** 1930) from R. E. Heath, Esq., 95, Hawes Lane, West Wickham, Kent.
Sedum sp. 'L. & S. 19688' for naming, from Messrs. Kibble & Clare Ltd., Ascot Wood Nurseries, Ascot, Berks, which was referred to the Scientific Committee for naming.

JULY 10, 1951

SCIENTIFIC COMMITTEE—Mr. E. A. Bowles, M.A., F.L.S., F.R.E.S., V.M.H., in the Chair, and six other members present.

Abnormal Pelargonium.—An abnormal Pelargonium, with light crimson flowers having up to 14 narrow petals, the inflorescence showing lateral prolification similar to that of specimens recorded earlier (cf. Minutes of June 26, 1951), was received from Mr. W. J. Hepburn, Hyde Park.

Daphne acutiloba.—The Hon. Lewis Palmer exhibited a specimen of a Daphne raised from seed (Ludlow and Sherriff 15803) collected in Bhutan which had pubescent

young shoots, glabrous narrowly elliptic leaves and small greenish flowers, the tube about 13 mm. long and densely pubescent, the lobes nearly 5 mm. long, acuminate and externally pubescent, the anthers exserted, the pollen orange. This was identified as *Daphne acutiloba*.

Acer monspessulanum microphyllum. Specimens were shown by Mr. Collingwood Ingram of typical *Acer monspessulanum* and a small-leaved variety, collected in Corsica, which corresponded to that named *A. monspessulanum* var. *microphyllum* by Boissier; this had leaves 1·5 to 2·5 cm. across, whereas those of the type may be more than 8 cm. across.

Abnormal Foxglove.—Dr. H. R. Fletcher sent an abnormal specimen of the Foxglove (*Digitalis purpurea*) having the corolla absent, but the stamens increased from 4 to 9 and joined at base, 2 being merely thickened at the tip of the filament, the other 7 bearing anthers; the 5 lobes of the corolla thus appeared to be replaced by 3 fertile stamens and 2 staminodes.

Double Anemones.—Mr. E. A. Bowles discussed the different types of doubling in Anemone with reference to the double varieties of *A. coronaria* offered by Messrs. Jacques Amand as 'Lord Derby,' 'Queen Wilhelmina,' 'Rosette' and 'Queen of Violets.' In these the perianth segments were few, broad and normal but the stamens and carpels had been completely transformed into numerous narrow strap-like flattened petaloid structures forming two marked zones, the structures derived from the stamens being distinctly shorter and narrower than those derived from the carpels which filled the centre of the flower and diminished in size from the outside inwards. These so-called 'Chrysanthemum-flowered' Anemones thus differed from the 'St. Brigid' varieties in which the number of perianth segments had been increased.

Alstroemeria Ligtu Hybrids.—Mr. Bowles exhibited specimens showing the great variation in colour of the plants known as *Alstroemeria Ligtu* hybrids.

Somatic Sport of Dianthus.—Dr. A. Q. Wells, Kidlington, sent a flowering shoot of Dianthus 'Highland Fraser' bearing a solitary white flower in addition to the usual red flowers.

Virus Disease of Daphne Mezerum. —Mr. D. Green drew attention to the existence of a dangerous virus disease of the mezereon (*Daphne Mezereum*) which had been recognized on material sent to Wisley. The leaves become puckered and mosaic-mottled and the growth of the whole plant sickly. Mr. Green recommended that affected plants should be destroyed.

FRUIT AND VEGETABLE COMMITTEE—Mr. F. A. SECRETT in the Chair, and twenty-four other members present.

Award Recommended:

Award of Merit

To Raspberry 'Malling Promise,' for Commercial and Private Garden use, from the Director, National Fruit Trials, Wisley.
To Raspberry 'Malling Exploit,' for Commercial and Private Garden use, from the Director, National Fruit Trials, Wisley.

Selected for trial at National Fruit Trials, Wisley

Black Currant Winch's Seedling No. 6, from H. J. Winch, Esq., Bracken, Empress Avenue, West Mersea, Colchester.
Black Currant Winch's Seedling No. 11, from H. J. Winch, Esq., Bracken, Empress Avenue, West Mersea, Colchester.
Black Currant 'Boskoop Giant' (Winch's Selected Strain), from H. J. Winch, Esq., Bracken, Empress Avenue, West Mersea, Colchester.

Other Exhibits

Group of Soft Fruit, from the Director, National Fruit Trials, Wisley.
Strawberry Cambridge No. 134, from Messrs. Kingsley Fruit Farms & Nursery, Ltd., Kingsley, Bordon, Hants.
Strawberry Cambridge No. 490, from Messrs. Kingsley Fruit Farms & Nursery, Ltd., Kingsley, Bordon, Hants.
Strawberry Cambridge No. 503, from Messrs. Kingsley Fruit Farms & Nursery, Ltd., Kingsley, Bordon, Hants.
Strawberry Cambridge No. 641, from Messrs. Kingsley Fruit Farms & Nursery, Ltd., Kingsley, Bordon, Hants.

FLORAL COMMITTEE A—Mr. G. W. LEAK, V.M.H., in the Chair, and eighteen other members present.

Awards Recommended:

Gold Medal

To Messrs. Blackmore & Langdon, Bath, for an exhibit of Begonias.
To Messrs. Blackmore & Langdon, Bath, for an exhibit of Delphiniums.

Silver-gilt Banksian Medal

To Mr. P. Simons, Ardleigh, for an exhibit of Sweet Peas.
To Messrs. E. W. Stedman, Ltd., Longthorpe, for an exhibit of Roses.

Silver Flora Medal

To Messrs. Thomas Carlile, Ltd., Twyford, for an exhibit of herbaceous plants.
To Messrs. John Waterer, Sons & Crisp, Ltd., Twyford, for an exhibit of Astilbes, Japanese Irises, etc.
To Messrs. Edward Webb & Sons (Stourbridge), Ltd., Wordsley, for an exhibit of Sweet Peas.

Silver Banksian Medal

To Messrs. T. Hilling & Co., Chobham, for an exhibit of old-fashioned Roses.
To Mr. E. B. Le Grice, North Walsham, for an exhibit of Roses.
To Queenswood School (gr. Mr. G. H. Symonds), Hatfield, for an exhibit of Show Pelargoniums.
To Messrs. R. Wallace & Co., Tunbridge Wells, for an exhibit of Hemerocallis, Alstroemerias, etc.

Flora Medal

To Mr. J. Amand, Holbeach, for an exhibit of Ranunculus and Anemones.
To Messrs. Benjamin R. Cant & Sons, Ltd., Colchester, for an exhibit of Roses.
To Messrs. Cobham Hall Estate Co., Cobham, Kent, for an exhibit of Alstroemerias and *Chrysanthemum maximum*.
To Mr. L. S. Harbutt, Wickhambrook, for an exhibit of Delphiniums, Gaillardias, etc.
To Messrs. Gavin Jones Nurseries, Ltd., Letchworth, for an exhibit of Alstroemerias.
To Lady Merton (gr. Mr. W. Eggleton), Maidenhead Thicket, for an exhibit of Sweet Peas.

Banksian Medal

To Messrs. Kelway & Son, Ltd., Langport, for an exhibit of Paeonies and Delphiniums.
To Mr. C. Newberry, Knebworth, for an exhibit of Pinks, Anemones and Lavender.
To Messrs. Wakeley Bros. & Co., Ltd., North Mymms, for an exhibit of herbaceous plants.

Award of Merit

To Begonia 'Aldwyth L. Berry,' as a cool greenhouse flowering plant (votes 16 for, 0 against), from Messrs. Blackmore & Langdon, Bath.
To Begonia 'Charmian,' as a cool greenhouse flowering plant (votes 16 for, 0 against), from Messrs. Blackmore & Langdon, Bath.
To Begonia 'Frances Powell,' as a cool greenhouse flowering plant (votes 13 for, 3 against), from Messrs. Blackmore & Langdon, Bath.
To Begonia 'Ivorine,' as a cool greenhouse flowering plant (votes 15 for, 1 against), from Messrs. Blackmore & Langdon, Bath.
To Begonia 'Juliet,' as a cool greenhouse flowering plant (votes 16 for, 0 against), from Messrs. Blackmore & Langdon, Bath.
To Begonia 'Ophelia,' as a cool greenhouse flowering plant (votes 13 for, 2 against), from Messrs. Blackmore & Langdon, Bath.
To Begonia 'Wayne Parker,' as a cool greenhouse flowering plant (votes 16 for, 0 against), from Messrs. Blackmore & Langdon, Bath.

Selected for Trial at Wisley

Chrysanthemum maximum 'Wirral Gem' and 'Wirral Perfection,' from Messrs. Burleydam Nurseries (Chester), Ltd., Little Sutton, Wirral, Cheshire.

Other Exhibits

Aconitum and Astrantia from Messrs. M. Prichard & Sons, Ltd., Christchurch.
Pelargonium from W. J. Hepburn, Esq., Hyde Park, London.
Rose, from C. J. Howlett, Esq., Earley, Reading.
Roses and Violas, from Mr. C. A. Jardine, Feltham.
Sweet Peas, Gladioli and herbaceous plants from Mr. A. H. Coe, Stockwell.

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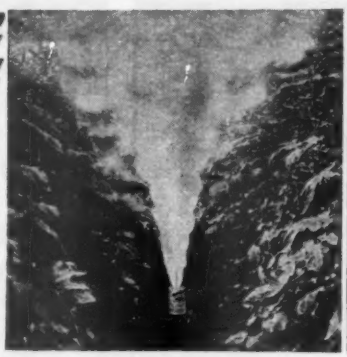

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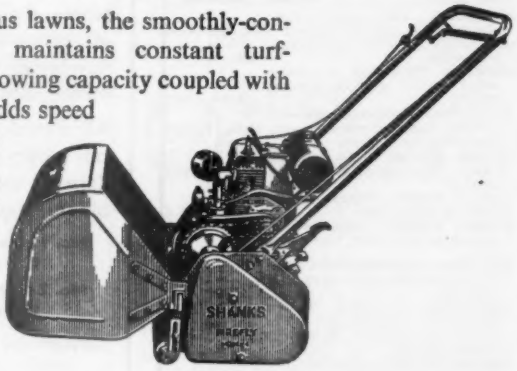

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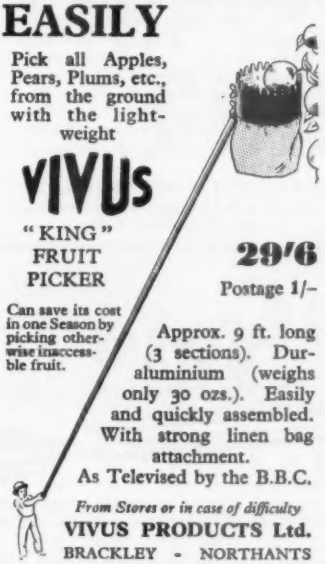

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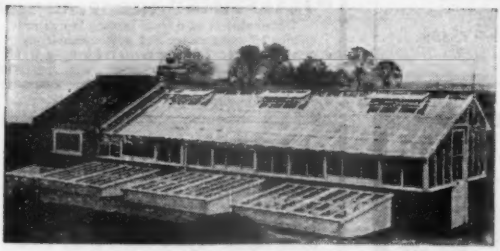

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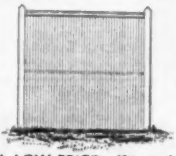

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